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Assessing the predictive validity of the Asset youth risk assessment tool using the Juvenile Cohort Study (JCS)

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Summary

Context

Asset is a structured risk assessment tool for young people used by all youth offending teams (YOTs) in England and Wales.¹ It is used to inform sentence and intervention planning. Higher Asset scores are associated with a higher risk of re-offending. Under the Scaled Approach,² young people are placed into one of three categories of increasing intensity of YOT supervision based on their Asset score (which is made up of static and dynamic factors).³

This research was commissioned as part of the Youth Justice Board's (YJB) review of assessment and intervention planning (2010/11)⁴ and evaluates how well Asset predicts future proven offending over a one-year period (i.e. has predictive validity) based on a sample of young people. In addition, the predictive validity of Asset was compared against the Offender Group Reconviction Scale (OGRS 3 – A static tool for assessing risk of re-offending), and several statistical models containing a combination of static and dynamic factors, with the aim of assessing which model or combination was the best predictor of proven re-offending of those tested.

Approach

A sample of 7,621 young people (5,126 sentenced young people and 2,495 Final Warning cases) with valid Assets (no missing section scores, all Assets completed within 30 days of the index disposal date), who were broadly representative of the national population of young people on the YOT caseload, was used to assess the predictive validity of Asset in terms of proven re-offending over one year. This was a subsample of the 13,975 cases from the Juvenile Cohort Study (JCS).⁵ The JCS

¹ At the time of the JCS data collection there were 157 YOTs. At the time of publication there were 158.

² A tiered approach to intervening with young people in order to reduce re-offending, which is based on the assessment of risk and need using the Asset tool. The Scaled Approach was formally introduced in England and Wales in November 2009.

³ Static factors refer to offender characteristics – such as age at first conviction – which cannot be altered. Factors such as living arrangements are dynamic in nature as they can change over time.

⁴ Teli (2011). Assessment and Planning Interventions: Review and Redesign Project. Statement of Intent – Proposed Framework. <http://www.yjb.gov.uk/NR/rdonlyres/BF0F4DC2-BA2E-4135-BC8E-89B2A150B3F5/0/AssessmentandPlanningInterventionStrategyconsultationonproposedmodel.pdf> In 2010 the YJB undertook some initial consultation and data gathering. The formal consultation period took place in March 2011.

⁵ The JCS was a joint initiative by the Ministry of Justice (MoJ) and the YJB. It comprised records of young people with a proven offence between 1 February 2008 and 31 January 2009, which were drawn from the case management systems of a sample of 30 YOTs in England and Wales. See Appendix 2 for further detail.

data were drawn from the case management systems of 30 YOTs between 1 February 2008 and 31 January 2009. The sample was matched against the Police National Computer (PNC),⁶ which enabled extraction of one-year proven re-offences⁷ and offending history, including variables required to calculate OGRS 3.

Statistical analysis was performed to measure Asset's ability to provide an accurate assessment of risk of proven re-offending over a one-year period in terms of three measures: a) whether they had re-offended at all (yes/no measure); b) the frequency of re-offending; and c) the severity. A series of statistical models⁸ predicting one-year proven re-offending was run to assess the predictive validity of Asset (dynamic and static factors), OGRS 3, and a combination of the measures. A standard statistical measure of predictive accuracy, the Area Under the Curve (AUC)⁹ statistic was calculated.

Key findings

- Asset was found to be a good predictor of proven re-offending within a one-year period. Young people with higher Asset 'static plus dynamic' scores were more likely to re-offend, to commit more re-offences, to commit more serious re-offences, and to receive a custodial disposal within a one-year follow-up period (compared to those with lower Asset scores). These findings broadly replicated those reported by previous studies of the predictive validity of Asset (Baker *et al*, 2003, 2005).
- The Asset 'dynamic' score and 'static plus dynamic' score were compared to different combinations of Asset dynamic and static factors and OGRS 3. Asset 'dynamic plus OGRS 3' was found to be the best predictor of proven re-offending of those tested.
- It was also found that using OGRS 3 as a predictor of risk of re-offending was as good as using Asset, but it should not be used for Final Warnings.

⁶ An operational computerised system used by police in England and Wales for recording offending.

⁷ Re-offending which occurs within one year of the start of a police/court order, or discharge from custody, and which subsequently results in a formal caution or conviction.

⁸ Binary logistic regression models, which model the relationship between a binary outcome (e.g. re-offending) and a set of explanatory variables (e.g. risk factors).

⁹ The higher the AUC value, the better the predictive validity.

- Out of the 12 Asset dynamic factors, 'lifestyle', 'substance use' and 'motivation to change' were highly statistically significant predictors of proven one-year re-offending. 'Living arrangements', 'family and personal relationships', and 'education, training and employment' were also statistically significant.¹⁰ Baker *et al* (2003) found 'lifestyle', 'living arrangements', 'substance use' and 'education, training and employment' (but not 'motivation to change' or 'family and personal relationships') to be significant predictors of reconvictions. The remaining six factors, although of less importance to predicting proven re-offending, are likely to still be relevant for understanding the needs experienced by young people.
- Not all young people (72%) had an Asset completed within 30 days prior to, or after, the index disposal.¹¹

Conclusions and implications for the practical application of risk assessment tools

- The predictive ability of Asset could be improved by replacing the Asset static component of the Scaled Approach with OGRS 3.
- OGRS 3 could provide similar predictions to Asset in terms of the likelihood of re-offending compared with either the pre- or current¹² Scaled Approach practice for undertaking Asset assessments. This suggests OGRS 3 has the potential to be utilised as an efficient and quick pre-screening tool to assess young people's risk in terms of re-offending as the information to calculate OGRS 3 can be extracted directly from the PNC. However, in order to inform intervention planning, the richer information collected via the 12 Asset sections would also be required, otherwise it would not be evident what areas of need should be

¹⁰ The section 'lifestyle' explores if the young person has age-inappropriate friendships, associations with pro-criminal peers, lack of structure during spare time, and other problems such as gambling; 'motivation to change' covers the young person's awareness of their problems and willingness to desist. 'Living arrangements' covers the type and suitability of accommodation. 'Family and personal relationships' explores who the young person has contact with and types of problems they may have experienced, e.g. violence and bereavement. 'Substance use' covers the types of substances used, when used, and age at first use. 'Education, training and employment' (ETE) covers current ETE situation and educational attainment.

¹¹ For most disposals, an Asset assessment should be conducted 10-15 days prior to the order being made (as part of the pre-sentence report). The start Asset should be completed within 10-15 days after the order is given. For further details, see Youth Justice Board (2010). National Standards for Youth Justice Services. <http://yjbpublications.justice.gov.uk/Resources/Downloads/National%20Standards%20for%20Youth%20Justice%20Services.pdf> Youth Justice Board (2010c). Youth Justice Annual Workload data. www.justice.gov.uk/publications/docs/yjb-workload-data-2008-09.pdf

¹² 'Current' refers to operational practice at the time of publication.

addressed. This finding supports Howard *et al's* (2009) suggestion to implement OGRS 3 in youth justice. However, this finding did not apply to young people on Final Warnings.

- Due to the lack of criminal history variables, OGRS 3 (and also Asset static factors) did not perform well for Final Warning cases and should not be used as a standalone measure for young people on Final Warnings. Not relying on criminal history variables is reflected in current practice as the Scaled Approach does not apply to young people on this disposal.
- Overall, the results of this study generally supported the application of OGRS 3 in the youth justice system for predicting risk of re-offending, which was proposed as part of the YJB review of assessment (2010/11).
- The timeliness and completeness of Assets requires further improvement to ensure Assets are completed in line with National Standards.

Limitations

There were important limitations to the data, which must be considered when interpreting these findings. The analysis was based on one-year proven re-offending and may underestimate the actual amount of re-offending. Further, although the sample was broadly representative of the national population of young people coming into contact with YOTs (in terms of their demographics), due to the longer follow-up times required, young people on custodial sentences were excluded. Also, lower level out-of-court disposals were excluded. The findings are therefore not representative of all criminal justice disposals.

Furthermore, the JCS was conducted before the introduction of the Scaled Approach and results referring to the 'simulated' Scaled Approach can only be regarded as indicative. Finally, this project assumed that Assets were correctly completed by practitioners. No additional quality assurance was undertaken on the assessments themselves, so it was not possible to assess whether factors (dynamic ones in particular) were being correctly rated, or whether previous assessments could simply have been 'copied'.

1. Context

Research has shown that young people who come into contact with the criminal justice system (CJS) often have multiple needs and difficulties which need to be identified and addressed in order to reduce their offending (see Case and Haines, 2009 for key literature). The assessment of risk factors related to re-offending for both young people and adults is now well established, and it is recognised that the various tools used to facilitate this process need to be re-evaluated and revised periodically to reflect findings from research and changes in the offender population.

This study was commissioned by the Youth Justice Board (YJB) to help inform their review of the assessment and interventions framework (See Teli, 2011)¹³ and build upon the earlier predictive validity studies of the youth risk assessment tool Asset, undertaken by Baker *et al* (2003, 2005). Specifically, this study aimed to use data from the Juvenile Cohort Study (JCS)¹⁴ to:

- examine how well Asset predicted proven re-offending¹⁵ over one year;
- explore which of the 12 dynamic factors¹⁶ of Asset were the most predictive of proven re-offending;
- create alternative versions of Asset to compare their performance against a) Asset 'dynamic' score, and b) simulated Asset 'static plus dynamic' score.

As it was important to provide timely results to inform the YJB assessment review, this study did not intend to exhaust all the many possible options in designing a risk assessment tool, and developing the 'best' possible predictor of youth re-offending.

¹³ In 2010 the YJB undertook some initial consultation and data gathering. The formal consultation period took place in March 2011.

¹⁴ See Appendix 2 for more information on the JCS.

¹⁵ Re-offending which occurs within one year of the start of a police/court order, or discharge from custody, and which subsequently results in a formal caution or conviction.

¹⁶ Static factors refer to offender characteristics – such as age at first conviction – which cannot be altered. Factors such as living arrangements are dynamic in nature as they can change over time.

1.1 Asset

Asset¹⁷ is a structured risk assessment tool used for all young people, aged 10 to 17 years, who come into contact with youth offending teams (YOTS) – i.e. those receiving a Final Warning, community, or custodial sentence. It was developed by the Centre for Criminological Research, University of Oxford, and introduced by the YJB in 2000 to provide standardised measurement across youth justice services. A validated and revised version of Asset was launched by the YJB in 2006.

Asset is used by all YOTs in England and Wales for sentence and intervention planning purposes and forms the basis for pre-sentence reports.¹⁸ A young person's Asset score influences the level and type of supervision given by the YOT worker. It also informs their referral onto programmes to reduce their re-offending and to address factors associated with their anti-social and criminal behaviour such as substance misuse and education, training and employment. The accurate assessment of risk is considered important to allocate resources appropriately.

The Asset 'Core Profile' includes demographics and explores offence-related information (offence details, criminal history) and these are known as 'static' factors. In addition, there are 12 sections covering various aspects of a young person's life which may be related to offending. These factors are known as 'dynamic' in recognition of the fact that they can change over time. The 12 sections cover the following areas:

- living arrangements;
- family and personal relationships;
- education, training and employment;
- neighbourhood;
- lifestyle;
- substance use;
- physical health;
- emotional and mental health;
- perception of self and others;
- thinking and behaviour;

¹⁷ <http://webarchive.nationalarchives.gov.uk/20110218140639/> and <http://www.yjb.gov.uk/en-gb/practitioners/Assessment/Asset.htm>

¹⁸ Reports written by YOT workers to inform court sentencing decisions.

- attitudes to offending;
- motivation to change.

Asset also includes a section on positive areas in a young person's life. This section covers individual, family, and community factors.

1.2 Implementing Asset

An interview with the young person is conducted by a trained YOT worker and forms the basis for the assessment. Asset is supplemented by information from other agencies and sources, including families or carers. This generates a detailed picture of a young person's offence and offending history, his/her current needs, and risks of re-offending.

Based on the information gathered, the YOT worker makes a judgement about the impact of each of the 12 dynamic sections on the likelihood of re-offending. Sections are given a rating from 0 (not associated at all) to 4 (very strongly associated). These section ratings are summed up to a total Asset score for the person, which can range from 0 to 48. Assessors are also expected to complete free text fields to explain their judgements and show the basis for their ratings.

The Scaled Approach Framework (Youth Justice Board, 2010a) was introduced in November 2009. It aimed to focus the attention and resources of the YOT on those who are at highest risk of re-offending. To help facilitate this process four static factors¹⁹ (with an accumulative score range from 0 to 16 – low to high risk of re-offending) were added to the existing dynamic scores – making up a total Asset score for the young person which ranges from 0 to 64, with 64 being the highest possible score for risk of re-offending. Young people are grouped into three levels of interventions: standard (Asset score of 0–14), enhanced (score of 15–32), and

¹⁹ Asset static factors comprise offence type, age at first reprimand/caution/warning, age at first conviction, and number of previous convictions.

intensive (33–64). The levels specify a minimum number of YOT contacts.²⁰ The Scaled Approach does not apply to those receiving Final Warnings because Final Warning cases will be early on in their offending careers so it would not be appropriate to complete the static questions on criminal history which are required under the Scaled Approach.

To reflect an offender's current level of risk accurately, Assets need to be completed as close in time to the offence/disposal as possible. The time frame for completion of an Asset was first introduced in the national standards for youth justice services (Youth Justice Board, 2004) and new statutory guidance was approved in late 2009 (Youth Justice Board, 2010b). For most disposals, where required to inform the pre-sentence report, an Asset assessment should be conducted 10–15 days prior to the order being made. The start Asset should then be completed within 10–15 days after the order is given.

According to National Standards, repeat Assets should be conducted on a regular basis. For most disposals this is within three months of the order being given, or if there are significant developments in a person's life, such as re-offending. However, it is possible that some Assets may just be copied and pasted from previous assessments – e.g. where a person's situation has not changed.

1.3 Different components of Asset

In addition to the Core Profile, the Asset 'Bail Profile' is used by YOTs to inform bail or remand decisions. A shortened version of Asset is available for Final Warnings. If there is evidence of harm to others, or the young person is classed as vulnerable, two further Asset sections – the 'Risk of Serious Harm to Others' (ROSH) and the 'Vulnerability Management Plan' – are required to be completed. In addition, Asset includes a self-assessment form ('What Do You Think') which provides young people with the opportunity to give their views. There is also an Asset Mental Health Screening Tool for children and adolescents, which was developed to identify mental

²⁰ Standard: a minimum of two contacts per month in the first three months of the order, followed by a minimum of one contact per month for the remainder of the order. Enhanced: a minimum of four contacts per month in the first three months of the order, followed by a minimum of two contacts per month for the remainder of the order. Intensive: a minimum of 12 contacts per months for the first three months, followed by a minimum of four contacts per month for the remainder of the order. Changes to these minimum contacts have been proposed as part of the 2010/2011 YJB consultation on assessment and intervention planning.

health needs and to enable support and referrals to CAMH (Child and Adolescent Mental Health) services.

There are a number of other assessment tools used for young people who come into contact with children's services or the wider criminal justice system in England and Wales. An overview of some of these can be found in Appendix 1.

1.4 Predictive validity of risk assessment tools

'Predictive validity refers to the extent to which scores on an assessment tool are able to predict some outcome measure.' (Debidin, 2009, p.78)

Asset

To date two studies have looked at the predictive validity of Asset, both using administrative data provided by YOTs from 2000, the year Asset was introduced.

Baker, Jones, Roberts and Merrington (2003) undertook a study to assess how good Asset dynamic factors were in terms of predicting reconvictions over a one-year follow-up period. Initially 3,395 Asset forms, completed between June and September 2000, were collected from a sample of 39 out of 157 YOTs. Of these, 1,210 Assets (or 36%) – completed in June and July 2000, and matched against the Police National Computer (PNC) – were used for the predictive validity study.

The study reported that Asset was a good predictor of reconviction.²¹ In summary, compared to those who had lower mean Asset scores, young people with higher Asset scores a) were more likely to re-offend; b) committed more re-offences; and c) went on to commit offences that were more serious and were more likely to receive custodial disposals. Asset also worked as well for younger people, females, and Black and minority ethnic groups.

Following on from the 2003 study, Baker, Jones, Merrington and Roberts (2005) extended the follow-up period to look at how well Asset dynamic scores predicted reconvictions over a two-year period. Their sample consisted of 1,946 Assets completed between June and September 2000, which matched against the PNC and

²¹ Area Under the Curve (AUC) statistical value being 0.72, which is considered good.

where a 24-month follow-up was possible. This study largely replicated the results of the 2003 study.²²

Offender Group Reconviction Scale 3 (OGRS 3)

OGRS was developed as a short risk assessment tool based on static factors only – age, gender, and criminal history. OGRS was designed to be completed by practitioners to facilitate standardised assessment across adult probation services and provides a quick way of identifying offenders' likelihood of re-offending. It has been updated regularly since it was introduced in the late 1990s. The latest version, OGRS 3, was introduced in 2008, although an updated version, OGRS 4 (Howard and Moore, in press) is expected to become operational in 2012.

Research (e.g. Howard, Francis, Soothill and Humphreys, 2009; Yang, Wong and Coid, 2010; Debidin, 2009) has shown that OGRS has good predictive validity.²³ Compared to previous versions, OGRS 3 has the added advantage that it also has the potential to be used as a predictor for proven re-offending of young people aged 10–17 years – e.g. Howard *et al* (2009) suggested the use of OGRS 3 across the criminal justice system.

1.5 Review of youth risk assessment and intervention planning approach

Asset has come under increasing scrutiny in recent years from academics and practitioners (see Case and Haines, 2009, for a critique). In 2011, the YJB issued, as part of their review of risk assessment and intervention planning, a public consultation paper outlining four options for the future application of Asset (Teli, 2011). Among the reasons for the review was a shift among some academics and practitioners from a singular focus on the 'risk and protective factors paradigm' – which Asset is based on – to take more account of theories of desistance, which try to understand the underlying processes which stop people offending (e.g. see Bottoms, Shapland, Costello, Holmes and Muir, 2004). Also, there was a need to improve the alignment between Asset and other assessment tools used for children and young people, in particular the Common Assessment Framework (CAF).

²² The AUC value was only slightly better (0.73) at the two-year follow-up.

²³ For example, having AUC values of 0.78 and 0.80.

With regard to Asset, the consultation document proposed that some elements of the Scaled Approach would be maintained, e.g. the three intervention bandings – although some changes were proposed, such as reducing the minimum contact requirements for those in the 'intensive' banding (or high risk of re-offending). The proposed model, as outlined in the consultation paper, also recommended the use of OGRS 3 for assessing the likelihood of re-offending.

Other work has also suggested improvements around assessment. For example, the Breaking the Cycle Green Paper (Ministry of Justice, 2010d) proposed to explore how more practitioner time could be spent working with the young person, and the Public Accounts Committee (2011) recommended that a young person's communication difficulties should be assessed as part of the intervention plan.

1.6 Report outline

Section 2 of this report explains the approach taken to extract a sample to test the research aims, and section 3 presents the results. Section 4 outlines the main conclusions and implications.

2. Approach

The study used data from the Juvenile Cohort Study (JCS). The JCS was a joint initiative by the Ministry of Justice (MoJ) and the YJB. It comprised records of young people with a proven offence, which were drawn from the case management systems²⁴ of a sample of 30²⁵ out of 157²⁶ YOTs in England and Wales.

Young people were eligible for inclusion in the JCS cohort if they:

- had an 'eligible' index disposal²⁷ during the study period (between 1 February 2008 and 31 January 2009);
- were aged 10–17 years at the time of the index disposal; and
- were normally resident within the YOT area.

Applying these criteria led to a total cohort of 13,975 young people. Those who received multiple disposals during the study period were counted only once.²⁸ Further details about the JCS, the characteristics of the total JCS cohort, and the samples used for the analysis in this paper, are included in Appendix 2.

The JCS also included a small-scale programme of interviews with YOT practitioners. These were conducted to investigate their views, to shed light on the context in which they work, and to provide a background to the administrative data. It should be noted that, while the sampling here intended to provide a reasonable profile of the way each participating YOT operated, the interviews cannot be seen to present the views of all YOT practitioners. Findings that specifically relate to Asset are presented in Appendix 3 and drawn out where relevant in the text, including perceived strengths and weaknesses and areas considered difficult to explore.

²⁴ Youth Offending Information System (YOIS) and Reporting and Analysis for Improvement through school Self-Evaluation (RAISE) – also known as Careworks.

²⁵ Initially the aim was to randomly select 30 YOTs to participate. However, when some YOTs were unable to take part, further YOTs were specially targeted which had characteristics similar to those YOTs which had initially refused to take part.

²⁶ There were 157 YOTs at the time of the JCS. At the time of publication, there were 158.

²⁷ Eligible disposals included Final Warnings; Referral Orders; Reparation Orders; Action Plan Orders (APOs); Attendance Centre Orders (ACOs); Community Punishment Orders (CPOs); Community Punishment and Rehabilitation Orders (CPROs); Community Rehabilitation Orders (CROs); Curfew Orders; Supervision Orders; Detention and Training Orders (DTOs). Only disposals which led to YOT interventions with the young person, as identified by the JCS feasibility study, were included.

²⁸ This was particularly important when considering frequency of re-offending to avoid inflating the real extent of re-offending.

2.1 Representativeness of the JCS

The JCS cohort was compared to the national population of young people coming through the criminal justice system as reported by the YJB's 2008/09 annual workload statistics.²⁹ The cohort was found to be broadly representative of the demographics of young people with a proven offence in England and Wales. See Appendix 2 for further details on the representativeness.

2.2 Sample selection process

Matching to the Police National Computer (PNC)

All cases were matched against the PNC in order to extract offending history and proven re-offences information. A standard waiting time of 18 months from index disposal was required to ensure adequate follow-up of offences over a one-year time period.³⁰

The match rate was high (i.e. 13,741 – 98%) when based on PNC ID,³¹ name and date of birth (DOB). Thus, in the majority of cases, the correct people could be found on the PNC. However, when 'disposal date' was also taken into account, the number who matched reduced to 11,421. This was reduced further to 10,858 once exact matches on DOB and gender were taken into account.³²

Offending history, proven re-offences, and variables required to construct OGRS 3³³ and the Asset static factors were also extracted from the PNC.

²⁹ The most recent publication of the Youth Justice Board's annual workload statistics based on Youth Justice Management Information System (YJMIS) data can be found at <http://www.justice.gov.uk/publications/statistics-and-data/youth-justice/statistics.htm>

³⁰ A 'one-year proven re-offence' means that a re-offence must have been committed within 12 months of the disposal start date *and* the re-offence must have been given a disposal within 18 months of the first disposal date. The extra six months is required to ensure that an offence committed at the end of the 12 months follow-up has enough time to be processed through the court system and recorded on the PNC. It could be that some serious cases take longer to process, so this analysis may have underestimated the amount of serious re-offending within the one-year period.

³¹ PNC ID refers to the unique person ID found on the Police National Computer.

³² The matching process also identified a small number of duplicate entries on the JCS. These were accounted for by young people who were subject to supervision by two separate YOTs or, in a small number of cases, those who were erroneously recorded twice by the same YOT. Asset and offence-related data on these duplicates were compared, and the entry with the least information was removed from the analysis.

³³ For further information on the variables included, see Howard *et al* (2009).

A total of 491 (3.5% of the total cohort) Detention and Training Orders (DTOs)³⁴ were excluded from the analysis because, at the time of writing, not enough time would have elapsed between release from custody and follow-up of re-offences during the community part of the order. The exclusion of young people with more serious disposals may affect the generalisability of the results for this group.

Selecting suitable Core and Final Warning Assets

Core Assets and Final Warning Assets, which were completed closest in time to the index disposal date, were identified. Applying the guidelines set out in the Youth Justice National Standards (Youth Justice Board, 2010b) led to a large level of attrition of cases. To increase the sample size, in consultation with the YJB, the time frame was extended to 30 days prior to, and after, the disposal date. This approach captured both Assets which were conducted to inform pre-sentence reports, and the initial Asset assessment after the order was made.

Only one (Core/Final Warning) Asset assessment per offender was included. Other components of Asset (protective factors, bail/remand, 'Risk Of Serious Harm', 'What Do You Think') do not include numerical ratings of the offender's likelihood of future offending, and were therefore not included in the analysis for this study. The attrition of cases during the sample selection and matching process is shown in Table 2.1. Taking account of all the stages in the selection process, the final sample of young people matched against the PNC who had a 'valid' Asset Core or Final Warning assessment was 7,621 (55% of the total JCS cohort). Excluding Final Warning cases led to a 'sentenced' sample of 5,126 young people (37% of the total JCS cohort). This sample was extracted in order to create the Asset scoring system used under the Scaled Approach (i.e. static plus dynamic score out of 64), which does not apply to Final Warnings (because Final Warning cases will be early on in their offending career so it would not be appropriate to complete the static questions on criminal history which are required under the Scaled Approach).

³⁴ Detention and Training Orders (DTOs) are custodial sentences which can last from four months to 24 months in length. A young person spends the first half of the order in custody and the second half released on licence. Should they offend while on licence, they may be recalled back to custody.

In summary:

- 6% of individuals in the JCS cohort did not have a core or Final Warning Asset, but the majority of these were Final Warnings.
- 11% of Assets were not complete (0–4 entered for each of the 12 sections).
- The largest effect on attrition was due to the Asset not being recorded within +/-30 days of the disposal. 28% of the cohort did not have Assets completed within this time frame.

Table 2.1: Sample selection, matching process and attrition

Stage	Number of people	Per cent*
<i>PNC matching and exclusion criteria</i>		
Individuals identified for inclusion in the JCS cohort	13,975	100%
Number of people matched to the PNC based on PNC ID, name, date of birth	13,741	98%
Excluding Detention and Training Orders	13,484	96%
Excluding cases where gender and date of birth on the PNC and JCS did not match	12,969	93%
PNC disposal match (index disposal date on the JCS matches with the PNC within +/-7 days)	11,421	82%
<i>Asset selection criteria</i>		
Number of people with Asset assessments	13,075	94%
Number of people with <i>complete</i> Asset assessments	12,405	89%
Number of people with Assets within 30 days prior to/or after the JCS index disposal	10,085	72%
Final sample: Number of people with valid Asset assessments, matched against PNC, excluding DTOs	7,621	55%
Final 'sentenced' sample (excluding Final Warnings): ³⁵ Number of sentenced people with valid Asset assessments, matched against PNC, excluding DTOs and Final Warnings	5,126	37%

Source: JCS

*Based on total JCS cohort: 13,975

³⁵ A 'sentenced' sample was extracted in order to create the Asset scoring system used under the Scaled Approach, which does not apply to Final Warnings.

Sample characteristics and representativeness

The characteristics of the sample comprising young people who were sentenced or received a Final Warning (n=7,621) were broadly in line with the overall JCS cohort, which in turn was broadly in line with overall YOT caseload (according to 2008/09 Youth Justice Annual Workload data). The male/female split was 80:20 – 87% were White, 4% Asian, 5% Black/British, 4% mixed, and the remainder Chinese/or Other (less than 1%) and not known (less than 1%). Over half the sample was aged 16–17 (53%), 43% were between 13 and 15, and a small proportion were aged 10 to 12 years (5%). The mean age was 15.3 years.

The sample of young people who were sentenced (n=5,126) was also found to be broadly representative of the overall sentenced YOT caseload.

Further information on representativeness and sample characteristics in terms of age, group, gender and ethnicity by disposal category is provided in Appendix 2, and a summary of the offending history is contained in Appendix 4.

2.3 Proven re-offending

Three measures of proven re-offending over a one-year period were calculated for this study: binary re-offending rates (yes/no), frequency of re-offending, and severity of re-offences.

- The proportion of young people who re-offended (yes/no rate) was 44.4%.³⁶
- The frequency of re-offending rate was 136.7 offences per 100 young people.
- The severity of re-offending rate (using ‘serious violence and sexual offences’³⁷ as a measure of severity) was 0.83 serious offences per 100 young people.

³⁶ This compared to 36.9% as reported by the 2009 juvenile re-offending measure (Ministry of Justice, 2011b) and 37.3% in the 2008 publication (Ministry of Justice 2010a). This discrepancy may be due to the different compositions of the samples used (for example the JCS did not include discharges, fines, and some out-of-court disposals – the latter of which accounted for about half of those included in the juvenile re-offending publication and had a much lower re-offending rate than those receiving other disposals). The actual number of re-offences committed during the one-year follow-up period was 10,418. The number of sentencing occasions during the one-year follow-up period was 6,557. For the frequency measure, the rate of 136.7 offences per 100 young people compared to 110.5 for the juvenile re-offending measures for 2009, and 113.9 for 2008. It was not possible to compare to the juvenile re-offending measure in terms of severity because different definitions of severity were used.

³⁷ Offences resulting in death, grievous bodily harm (GBH), serious sexual offences. This is according to the new re-offending measure (see Ministry of Justice, 2010c; Ministry of Justice, 2011c).

2.4 Asset scores

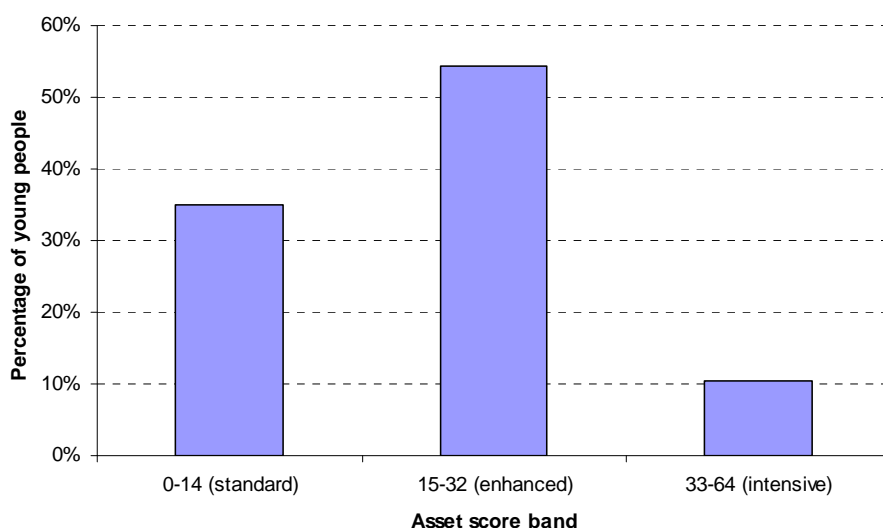
Total Asset scores can range from 0 to 64 and are made up of the scores on the static (0–16) and dynamic factors (0–48) as introduced under the Scaled Approach. The Scaled Approach does not apply to Final Warning cases (because Final Warnings will be early on in their offending career so it would not be appropriate to complete the static questions on criminal history which are required under the Scaled Approach) and these are therefore scored solely on the dynamic factors and hence receive a score out of 48. However, as the JCS data collection period ended before the introduction of the Scaled Approach in November 2009, offending history information, required for the Asset static factors, was extracted from the PNC and the scores calculated retrospectively. It is important to note that this ‘simulated’ Scaled Approach may not necessarily reflect the way this static information would have been recorded on Asset.

The mean score for sentenced young people (n=5,126), excluding Final Warnings, was 19.3. The most frequent score, the Mode, was 15, and the Median (mid-point) was 18. Only one young person scored zero, and nobody scored the maximum score of 64. The range was 0–58.

Figure 2.1 displays the distribution of total Asset scores (out of 64) under the three Scaled Approach score bands.³⁸ 35.1% of the sample had total Asset scores of 0–14 (standard), 54.4% scored 15–32 (enhanced), and 10.4% were in the highest score band of 33 and above (intensive).

³⁸ These values were generated to simulate the Scaled Approach, which is currently in operation. However, as the JCS data collection period ended before the introduction of the Scaled Approach, offending history information, required for the Asset static factors, was extracted from the PNC and the scores calculated retrospectively. It is important to note that this may not necessarily reflect the way practitioners would have recorded the static factors and therefore should not be interpreted as an evaluation of the Scaled Approach.

Figure 2.1: Distribution of total Asset score by Scaled Approach score band (dynamic and static scores) (n=5,126)



2.5 Limitations

There were important limitations to the data which must be considered when interpreting these findings. The analysis was based on one-year proven re-offending and may underestimate the actual amount of re-offending. Further, while the sample was broadly representative of the national population of young people coming into contact with YOTs (in terms of their demographics), due to the longer follow-up times required, young people on custodial sentences were excluded. Also, lower level out-of-court disposals were excluded. The findings are therefore not representative of all criminal justice disposals.

Furthermore, the JCS was conducted before the introduction of the Scaled Approach and results referring to the 'simulated' Scaled Approach can only be regarded as indicative. Finally, this project assumed that Assets were correctly completed by practitioners. No additional quality assurance was undertaken on the assessments themselves, so it was not possible to assess whether factors (dynamic ones in particular) were being correctly rated, or whether previous assessments could simply have been 'copied'.

3. Results

The predictive validity of Asset on proven re-offending over one year was assessed in several ways, and the results are reported in this section.

- First, using the 'sentenced' sample (n=5,126), the accuracy of the total Asset score (out of 64) in predicting the *proportion* of young people who re-offended within one year was measured (binary or yes/no rate), as was the *frequency* and *severity* of re-offences and disposals.³⁹ The 'sentenced sample' was extracted in order to create the Asset scoring system used under the Scaled Approach, which does not apply to Final Warnings.
- Second, a statistical model (binary logistic regression)⁴⁰ was run to determine which of the 12 Asset dynamic sections was most predictive of re-offending. In addition, in order to compare pre- and current⁴¹ Scaled Approach practice for undertaking Asset assessments – i.e. 'Asset dynamic (48)', and simulated 'Asset static plus dynamic (64)' – further models and Area Under the Curve (AUC)⁴² values were calculated for different combinations of Asset static/dynamic factors, and OGRS 3. This analysis was based on the combined 'sentenced' and Final Warning sample (n=7,621) to test the applicability of the models to a wider section of the YOT caseload.

³⁹ The analyses focused on the most serious re-offence and most punitive disposal within the one-year follow-up period.

⁴⁰ See Glossary for definition.

⁴¹ 'Current' refers to operational practice at the time of publication.

⁴² The AUC is a standard statistical measure of predictive validity. The higher the AUC value, the better the predictive validity.

3.1 Accuracy in predicting one-year proven re-offending

Key findings

Compared to those with lower Asset scores, young people with higher Asset scores:

- were more likely to re-offend (yes/no measure) – this finding also held when looking at females, Black and minority ethnic (BME) young people, and those aged 10–15;
- committed more re-offences;
- went on to commit offences that were more serious and were more likely to receive custodial disposals (although this latter finding could reflect the current youth justice ‘escalator’ policy whereby those with a more prolific criminal history, and score higher on the Asset static factors, have a higher chance of receiving a custodial sentence).

Accuracy in predicting proven re-offending (yes/no measure)

The ‘sentenced’ sample (n=5,126) was divided into two groups: those who re-offended during the one-year follow-up, and those who did not (binary rate). The average Asset score for those who re-offended was statistically significantly higher compared to those who did not re-offend (see Table 3.1). These results were broadly consistent with those found by Baker *et al* (2003, 2005).⁴³

Table 3.1: Difference in Asset simulated ‘static plus dynamic (64)’ score between re-offenders and non re-offenders (n=5,126)

	Number of people	Mean Asset score	Std. deviation
Re-offended	2,562	22.8	9.6
Not re-offended	2,564	15.9	8.5

Notes:

1. Source: JCS.

2. $t(5124) = 27.5$, $p < .001$.

3. Effect Size⁴⁴ eta squared = .13.

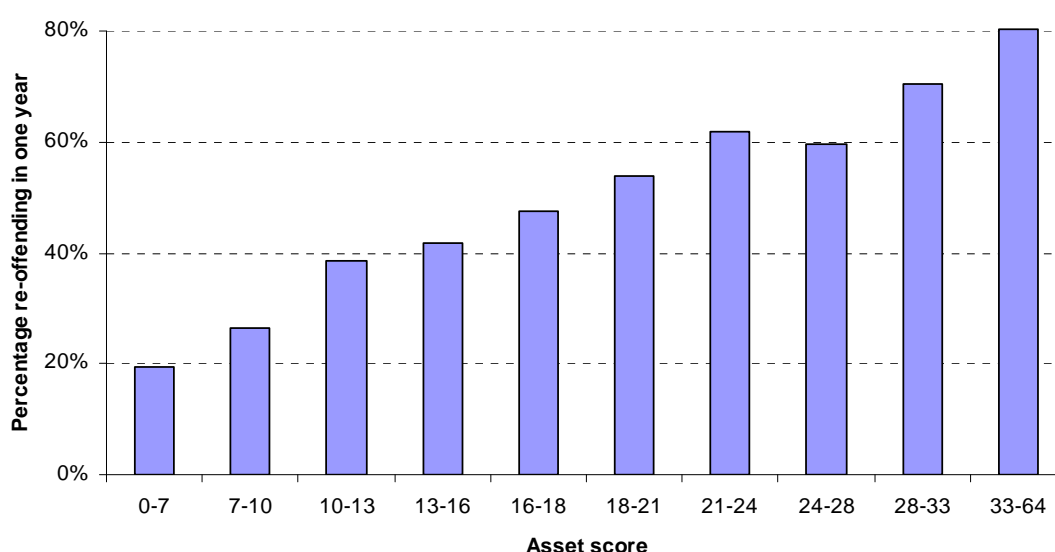
⁴³ Mean Asset scores were higher than those found by Baker *et al* (2003) due to different sample characteristics, and Baker *et al* only used dynamic factors – i.e. a score out of 48. See Appendix 5 for assessing the predictive validity of the dynamic (48) score using the JCS sample.

⁴⁴ Effect Size measures the strength of the relationship between two variables, for example Asset score and re-offending. Cohen (1988) categorised Effect Size into three bandings: small = .01; medium = .06; large = .14.

Figure 3.1 shows the proportions of young people who re-offended by Asset score band. A larger proportion of young people with higher Asset scores re-offended compared to those with lower Asset scores.

The sample was split into ten equal sized groups (deciles), i.e. each decile contained 10% of people. As the data were grouped by the exact percentage of people in each group, Asset scores on the cut-off point for one decile could be included in two neighbouring deciles.

Figure 3.1: Percentage of proven re-offending (yes/no measure) by Asset simulated 'static plus dynamic (64)' score band⁴⁵



Subgroup analysis in terms of age, sex, and ethnicity (yes/no re-offending measure)

The analysis was repeated for specific groups, i.e. females, Black and minority ethnic (BME) groups, and those aged 10–15.⁴⁶ It was shown that Asset accurately assigned higher scores to those who went on to re-offend than those who did not re-offend (see Appendix 6 for more details). Baker *et al* (2003) found similar results.

⁴⁵ See Table 3.5 for the AUC value for the simulated 'static plus dynamic (64)' score.

⁴⁶ Age grouping was consistent with Baker *et al* (2003).

Accuracy in predicting frequency of proven offending

Asset's accuracy in predicting frequency of re-offending was also found to be good. The average Asset score of young people who had 1–3 re-offences was compared to those who had more than 3 offences during one year.

The 1–3 and >3 categorisation was based on the previous study by Baker *et al* (2005). As with the binary rate, those who re-offended more frequently had, on average, a higher Asset score (see Table 3.2). These results were also in line with Baker *et al* (2003; 2005).

Table 3.2: Difference in Asset simulated 'static plus dynamic (64)' score by number of proven re-offences (n=2, 562)

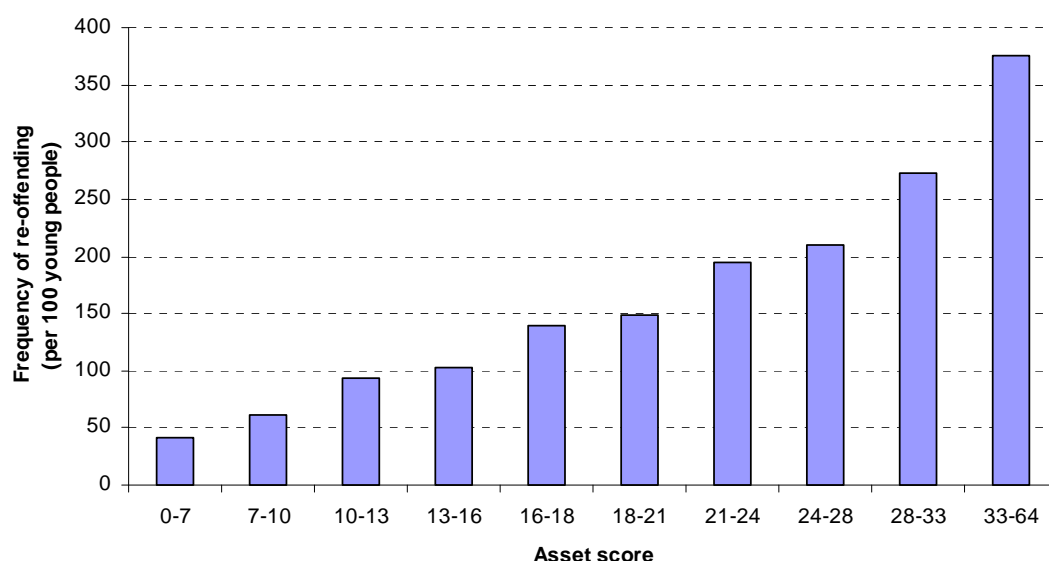
	Number of people	Mean Asset score	Std. deviation
1–3 re-offences	1,737	21.2	9.1
>3 re-offences	825	26.2	9.7

Notes:

1. Source: JCS.
2. $t(2560) = 12.9$ $p < .001$.
3. Effect size eta squared = .06.

The frequency rate (see Figure 3.2) shows a strong positive association between Asset score and frequency of re-offences, with the frequency rate being particularly high in the 33–64 score band.

Figure 3.2: Frequency of proven re-offending by young people by Asset simulated 'static plus dynamic (64)' score band⁴⁷



Accuracy in predicting severity of proven re-offending

Asset's ability to predict the severity of further re-offending was explored and it was found that young people with more serious re-offences had, on average, higher Asset scores than those committing non-serious offences. It was also found that young people receiving custody for a re-offence had higher Asset scores than those receiving less punitive disposals.

'Severity of re-offending' was considered in two ways: firstly by the most serious re-offence, and secondly by the most punitive criminal justice disposal within the one-year follow-up period. This was consistent with the approach taken by Baker *et al* (2005).

In terms of offence severity, all re-offences were categorised according to the new re-offending measure (Ministry of Justice, 2010c, Ministry of Justice, 2011c) as either 'serious violence and sexual offences',⁴⁸ 'serious acquisitive offences',⁴⁹ or 'non-serious'. As some people would have committed offences within more than one

⁴⁷ The sample was split into ten equal sized groups (deciles) based on the total Asset score, i.e. each decile contained 10% of people. As the data was grouped by the exact percentage of people in each group, Asset scores on the cut-off point for one decile could be included in two neighbouring deciles.

⁴⁸ Serious violence and sexual offences = offences resulting in death, grievous bodily harm (GBH), and serious sexual offences.

⁴⁹ Serious acquisitive offences = robbery, burglary, theft of vehicle and theft from vehicle.

of these three categories, only their most *serious* offence was included in the analysis.

Mean Asset scores increased with offence severity (see Table 3.3). Post hoc statistical comparisons⁵⁰ (comparing only two categories at a time) indicated that Asset was able to differentiate between those who went on to commit serious re-offences, and those who went on to commit ‘non-serious’ re-offences. However, Asset was unable to differentiate between the type of serious re-offence (i.e. sexual/violent or acquisitive).

These findings differ from those found in the previous Asset predictive validity studies: Baker *et al* (2003) did not find significant results, and Baker *et al*'s (2005) results were not as highly statistically significant.

Table 3.3: Difference in Asset simulated ‘static plus dynamic (64)’ score by most serious proven re-offence (n=2,562)

	Number of people	Mean Asset score	Std. deviation
Serious violence and sexual offences	53 [†]	25.9	10.7
Serious acquisitive offences	474	25.8	9.8
Non-serious	2035	22.1	9.3

Notes:

1. Source: JCS.

2. ANOVA: $F(2, 2559) = 32.8, p < .001$. There was a significant difference in mean Asset scores between a) those whose most serious proven re-offence was ‘serious violence and sexual offences’ and non-serious offences, and b) those whose most serious re-offence was ‘serious acquisitive offences’ and non-serious offences. There was no significant difference between those whose most serious offence was ‘serious violence and sexual offences’ and ‘serious acquisitive offences’.

3. Post hoc Tukey test was used.

4. Effect Size eta squared = .02.

[†] Caution should be applied to these findings given the small number of serious violence and sexual offences.

In terms of seriousness of re-offence disposal, all disposals were categorised as ‘custody’, ‘community penalty’ or ‘other’.⁵¹ Where an offender received disposals in more than one category, only the most serious disposal was considered.

⁵⁰ Using the Tukey Honestly Significant Difference (HSD) test (see Glossary for definition).

⁵¹ ‘Other’ combined out-of-court disposals, first tier and other disposals.

Table 3.4 shows that young people receiving custody for a further offence had statistically significantly higher mean Asset scores than those receiving community penalties and other penalties. However, it is important to bear in mind that this could reflect the current youth justice ‘escalator’ policy whereby those with a more prolific criminal history (so score higher on the Asset static factors) have a higher chance of receiving a custodial sentence.

The mean Asset scores of those receiving community penalties and ‘other’ disposals were not statistically significantly different, suggesting that Asset is not able to differentiate between the lower level disposals. These findings replicate those found by Baker *et al* (2003).

Table 3.4: Difference in Asset simulated ‘static plus dynamic’ score by most punitive criminal justice proven re-offence disposal (n=2,562)

	Number of people	Mean Asset score	Std. deviation
Custody	156	26.7	9.0
Community penalty	796	22.2	9.1
Other	1610	22.8	9.7

Notes:

1. Source: JCS.

2. ANOVA: $F(2, 2559) = 15.1, p < .001$. There was a significant difference in mean Asset scores between those receiving custody for a re-offence, and both those receiving a community penalty and those receiving other disposals. There was no significant difference between those receiving community penalties and other disposals.

3. Post hoc Tukey test was used.

4. Effect Size eta squared = .01.

3.2 Comparing Asset against other risk of re-offending predictors

A statistical model (binary logistic regression model)⁵² was run to determine which of the 12 Asset dynamic sections was most predictive of one-year proven re-offending.

In order to compare pre- and current Scaled Approach practice for undertaking Asset assessments – i.e. Asset ‘dynamic (48)’ and simulated Asset ‘static plus dynamic (64)’ – further models and Area Under the Curve (AUC) values (which is a standard measure of assessing predictive validity) were calculated for different combinations of Asset static/dynamic factors, and OGRS 3. This analysis was based on the

⁵² See Glossary for definition.

combined 'sentenced' and Final Warning sample (n=7,621) in order to test the applicability of the models to a wider section of the YOT caseload.

Key findings:

- Asset 'dynamic plus OGRS 3 (model)' was found to be the best predictor of one-year proven re-offending of the models tested.
- The predictive accuracy of using OGRS 3 on its own did not statistically significantly differ from the Asset 'dynamic (48)' score or the simulated 'static plus dynamic (64)' score. This implies that the less resource-intensive OGRS 3 measure could provide similar results in terms of the prediction of proven re-offending compared with either the pre- or current Scaled Approach practice for undertaking Asset assessments.
- Out of the 12 Asset dynamic factors, 'lifestyle', 'substance use', 'motivation to change', 'living arrangements', 'family and personal relationships' and 'education, training and employment' were found to be statistically significant predictors of proven one-year re-offending. The remaining six factors, although of less importance to predicting proven re-offending, are likely to still be relevant for understanding the needs experienced by young people.
- All assessment tools performed less well for young people on Final Warnings compared with those young people who were given more punitive disposals. In particular, OGRS 3 and Asset static factors only did not perform well for Final Warning cases, and should not be used as a standalone measure for young people on Final Warnings.

The following predictors of risk of re-offending, including combinations of predictors, were tested:

1. **Asset 'dynamic (48)'**. This is the score out of 48 for the Asset dynamic factors. It represents the pre-Scaled Approach practice for undertaking Asset assessments and remains the current practice for Final Warning cases.

2. **Simulated⁵³ Asset ‘static plus dynamic (64)’**. This is the score out of 64, which is derived from both static and dynamic Asset variables and was created to represent how assessments are currently undertaken for ‘sentenced’ cases under the Scaled Approach.
3. **Asset ‘dynamic (model)’**. This builds upon the Asset ‘dynamic (48)’ predictor. The 12 Asset dynamic section scores were entered into a logistic regression model in order to assess their unique contribution to the prediction of risk of re-offending. The model attributed different weights to each of the 12 factors in terms of their relative importance in predicting risk of re-offending.
4. **Asset ‘static (model)’**.⁵⁴ The variables used to rate the static component within Asset (covering offence type, age at first reprimand/caution/warning, age at first conviction, number of previous convictions) were extracted from the PNC and entered into a logistic regression model.⁵⁵ The aim was to assess their unique contribution to the prediction of risk of re-offending. The model attributed different weights to each of the factors in terms of their relative importance in predicting risk of re-offending.
5. **Asset ‘static plus dynamic (model)’**. This builds upon the Asset simulated ‘static plus dynamic (64)’ predictor. The static and dynamic variables were entered into a logistic regression model in order to assess their unique contribution to the prediction of risk of re-offending. The model attributed different weights to each of the factors in terms of their relative importance in predicting risk of re-offending.
6. **‘OGRS 3’**.⁵⁶ The variables for calculating OGRS 3 were extracted from the PNC.
7. **Asset ‘dynamic plus OGRS 3 (model)’**. The 12 Asset dynamic section scores and total OGRS 3 score were entered into a logistic regression model in order to assess their unique contribution to the prediction of risk

⁵³ These values were generated to simulate the Scaled Approach, which is currently in operation. However, as the JCS data collection period ended before the introduction of the Scaled Approach, offending history information, required for the Asset static factors, was extracted from the PNC and the scores calculated retrospectively. It is important to note that this may not necessarily reflect the way practitioners would have recorded the static factors and therefore should not be interpreted as an evaluation of the Scaled Approach.

⁵⁴ Static factors were recreated based on PNC information. These may not necessarily be the same as the ones the young person would have been given during the actual assessment under the Scaled Approach (which did not come into operation until November 2009).

⁵⁵ The scoring of the static factors can be found in YJB (2010a).

⁵⁶ Offender Group Reconviction Scale – OGRS3 is a static risk assessment tool.

of re-offending. The model attributed different weights to each of the factors in terms of their relative importance in predicting risk of re-offending.

Identifying which factors within Asset were the most predictive of re-offending

In order to run the logistic regression models to identify the sections in Asset which were most predictive of re-offending, and to calculate the AUC values to compare the predictive validity of the different models, the sample (including both sentenced and Final Warning cases) was randomly split into construction and validation samples.⁵⁷

The regression models were run on the construction sample and predicted probabilities of risk of re-offending were produced for each offender. The validation sample was used to check the accuracy of the model. AUC values were reported for the validation sample. The model summary statistics can be found in Appendices 7–10.

Variables were considered to be key predictors of re-offending if they were found to be statistically significant.

For the logistic regression model including the Asset 12 dynamic factors, 'lifestyle' 'substance use' and 'motivation to change' were highly statistically significant predictors of re-offending. 'Living arrangements', 'family and personal relationships' and 'education, training and employment' were also statistically significant⁵⁸ (see Appendix 7). Baker *et al* (2003) found 'lifestyle', 'living arrangements', 'substance use' and 'education, training and employment' (but not 'motivation to change' or 'family and personal relationships') to be significant predictors of reconvictions in their regression model. The remaining six factors, although of less importance to

⁵⁷ The construction sample comprised 70% of people (n=5,054) and the validation sample comprised 30% (n=2,172). The total sample used for this analysis (n=7,226) excluded those cases where gender and age on the PNC and the JCS database did not match (this led to the removal of 395 cases).

⁵⁸ The section 'lifestyle' explores if the young person has age-inappropriate friendships, associations with pro-criminal peers, lack of structure during spare time, and other problems such as gambling; 'motivation to change' covers the young person's awareness of their problems and willingness to desist. 'Living arrangements' covers the type and suitability of accommodation. 'Family and personal relationships' explores who the young person has contact with and types of problems they may have experienced, e.g. violence and bereavement. 'Substance use' covers the types of substances used, when used, and age at first use. 'Education, training and employment' covers current ETE situation and educational attainment.

predicting proven re-offending, may still be relevant for understanding the needs experienced by young people.

It is important to note that the scores on the 12 dynamic sections of Asset are based on assessor ratings. Those risk factors, which were found not to be significant predictors of re-offending, could either be genuinely unrelated to recidivism or, alternatively, failed to predict re-offending due to being rated unreliably (e.g. by assessing need rather than its relation to risk of re-offending). Related to this, in the small-scale exploratory programme of qualitative interviews with YOT practitioners conducted as part of the JCS, respondents were asked whether some sections of Asset were more difficult to explore than others. The areas most often reported as being difficult to explore with young people were 'emotional and mental health', followed by 'family and personal relationships' and 'perception of self and others'. The Asset areas interviewees found most difficult to address in their work related to 'family and personal relationships' and 'living arrangements'. As noted earlier however, the interviews cannot be seen to represent the views of all YOT practitioners. See Appendix 3 for more details on the YOT practitioner interviews.

Comparison of the predictive validity on proven re-offending of different models

The AUC value, a statistical indicator of predictive accuracy, was calculated for each measure to ascertain which of the models was the best predictor for one-year proven re-offending. An AUC value of 1 denotes perfect prediction, while a random model achieves a value of 0.5. A model is generally considered 'moderate' if the AUC value is 0.64–0.70 and 'good' if 0.71 or above (see Rice and Harris, 2005).

Table 3.5 shows that the best performing model was Asset 'dynamic plus OGRS 3 (model)' (AUC=0.72). The poorest performing model was Asset 'static (model)' (AUC=0.65).

The various models were compared against the pre- and current Scaled Approach practice for undertaking Asset assessments – i.e. Asset 'dynamic (48)' and simulated Asset 'static plus dynamic score (64)'. To summarise:

- There was no statistically significant difference in predictive capability by using Asset 'dynamic (48)' or 'static plus dynamic (64)' compared to 'OGRS 3'.

- Predictive accuracy could be improved through either a) simulated Asset ‘static plus dynamic (64)’; b) Asset ‘static plus dynamic (model)’; or c) Asset ‘dynamic plus OGRS 3 (model)’. All were statistically significantly better⁵⁹ than using the Asset ‘dynamic (48)’ score.
- The simulated Asset ‘static plus dynamic (64)’ score was statistically outperformed by Asset ‘static plus dynamic (model)’ and Asset ‘dynamic plus OGRS 3 (model)’.

Table 3.5: Comparison of predictive models

Predictor	AUC score (validation sample n=2,172)	Standard Error (SE) ⁶⁰	95% confidence intervals around the AUC	Models significantly different from Asset ‘dynamic (48)’	Models significantly different from Asset ‘static plus dynamic (64)’
Asset ‘static (model)’	0.65	0.012	0.63–0.67	*	***
Asset ‘dynamic (48)’	0.68	0.012	0.66–0.70	n/a	***
Asset ‘dynamic (model)’	0.69	0.011	0.66–0.71	*	
OGRS 3	0.69	0.012	0.66–0.71		
Simulated Asset ‘static plus dynamic (64)’	0.70	0.011	0.68–0.72	***	n/a
Asset ‘static plus dynamic (model)’	0.71	0.011	0.69–0.73	***	*
Asset ‘dynamic plus OGRS 3 (model)’	0.72	0.011	0.70–0.75	***	***

Notes:

1. Source: JCS.

2. Asterisks indicate whether models differ significantly.

3. Significance level: * <.05. ** <.01. *** <.001.

⁵⁹ p<.001.

⁶⁰ The ‘Standard Error’ gives an estimate of the uncertainty about a calculated value (here the AUC value). The smaller the Standard Error, the more confidence that the reported value is the ‘true’ value.

Comparison of the predictive validity on proven re-offending of different models for Final Warnings and sentenced young people

The following analysis explored whether the young person's disposal had an impact on the predictive accuracy of the tested models. The logistic regression analyses were repeated on two samples – i.e. young people who had received a Final Warning (Table 3.6) and those who had been sentenced (Table 3.7).

AUCs for all measures were lower for Final Warning cases compared to sentenced young people.

The results showed that all models performed worse for Final Warnings compared to sentenced cases. In particular, static factors performed worse for Final Warning cases compared to sentenced cases. This might be expected given that it may be more difficult to predict re-offending for young people who have little or no offending history and little previous contact with criminal justice agencies. Also, this could be accounted for by a number of other reasons – for example, Final Warning cases do not always meet with a YOT worker so less may be known about their risk factors.

Therefore, static predictors, including OGRS 3, should not be used as a standalone measure to predict re-offending for those young people on Final Warnings. This is reflected in current practice whereby the Asset score in Final Warning cases is derived from dynamic factors only (i.e. a score out of 48).

Table 3.6: Comparison of predictive models for Final Warnings

Predictor	AUC Scores Final Warning cases validation sample N=712	Standard error (SE)	95% confidence intervals around the AUC	Models significantly different from Asset 'dynamic (48)'	Models significantly different from Asset 'static plus dynamic (64)'
Asset 'static (model)'	0.55	0.023	0.51–0.59		***
Asset 'dynamic (48)'	0.61	0.023	0.56–0.65	n/a	
Asset 'dynamic (model)'	0.62	0.023	0.57–0.66		
OGRS 3	0.58	0.023	0.53–0.62		
Simulated Asset 'static plus dynamic (64)'	0.62	0.023	0.57–0.66		n/a
Asset 'static plus dynamic (model)'	0.63	0.023	0.58–0.67		
Asset 'dynamic plus OGRS 3 (model)'	0.63	0.023	0.59–0.68		

Notes:

1. Source: JCS.

2. Asterisks indicate whether models differ significantly.

3. Significance level: * <.05. ** <.01. *** <.001.

Table 3.7: Comparison of predictive models for sentenced cases

Predictor	AUC Scores Sentenced young people validation sample N=1,460	Standard error (SE)	95% confidence intervals around the AUC	Models significantly different from Asset 'dynamic (48)'	Models significantly different from Asset 'static plus dynamic (64)'
Asset 'static (model)'	0.65	0.014	0.63–0.68		***
Asset 'dynamic (48)'	0.67	0.014	0.64–0.70	n/a	***
Asset 'dynamic (model)'	0.68	0.014	0.64–0.70		*
OGRS 3	0.69	0.014	0.67–0.72		
Simulated Asset 'static plus dynamic (64)'	0.69	0.014	0.67–0.72	***	n/a
Asset 'static plus dynamic (model)'	0.71	0.013	0.68–0.73	***	
Asset 'dynamic plus OGRS 3 (model)'	0.73	0.013	0.70–0.76	***	***

Notes:

1. Source: JCS.

2. Asterisks indicate whether models differ significantly.

3. Significance level: * <.05. ** <.01. *** <.001.

4. Conclusion and implications

This study aimed to assess whether Asset, after around a decade of use, still predicts proven re-offending among young people. The findings have also informed the YJB review of assessment and intervention planning (2010/11).

The findings from this study suggest that Asset is still a good predictor of proven re-offending among young people. The findings were broadly in line with the earlier study conducted by Baker *et al* (2003), which was based on the dynamic (48) score.

The previous studies on the predictive validity of Asset (Baker *et al*, 2003, 2005) could be criticised for having a relatively small and potentially unrepresentative sample, and using 'reconviction' rather than 're-offending' (see Case and Haines, 2009). In comparison, this study used a large sample, broadly representative of the YOTs caseload. A number of different models were tested in terms of their predictive accuracy, including, for the first time, Asset 'dynamic plus OGRS'. The findings from this study showed that Baker *et al*'s 2003 and 2005 results still hold true.

The study shows the following findings.

- Asset was found to be a good predictor of proven re-offending within a one-year period. Young people with higher Asset scores were more likely to re-offend, to commit more re-offences, to commit more serious re-offences, and were more likely to receive a custodial disposal within a one-year follow-up period (compared to those with lower Asset scores).
- Different combinations of Asset dynamic/static factors and OGRS 3 were compared. Asset 'dynamic plus OGRS 3' was found to be the best predictor of proven re-offending among those tested. The predictive ability of Asset could be improved by replacing the Asset static component of the Scaled Approach with OGRS 3.
- Out of the 12 Asset dynamic factors, 'lifestyle', 'substance use', 'motivation to change', 'living arrangements', 'family and personal relationships' and 'education, training and employment' were found to be statistically significant predictors of proven one-year re-offending. The remaining factors, although of less importance to predicting proven re-offending, are still likely to be relevant for understanding the needs experienced by young people.

- Using OGRS 3 on its own did not significantly differ from the Asset ‘dynamic (48)’ score or the simulated ‘static plus dynamic (64)’ score in terms of predictive accuracy, and could be less resource-intensive to complete in practice because the information to calculate OGRS 3 can be extracted directly from the PNC. This approach would also address some of the weaknesses of Asset (e.g. time-consuming, repetitive and subjective) raised in the JCS practitioner interviews (see Appendix 3). Using OGRS 3 also supports Howard et al’s (2009) suggestion to implement OGRS 3 in youth justice. However, a full assessment may still be necessary for intervention planning purposes, because OGRS 3 alone does not highlight areas of need that should be addressed. Also, given the lack of criminal history, OGRS 3 did not perform well for Final Warning cases.
- Only 72% of young people had an Asset completed within 30 days of the index disposal, so further improvements are required to ensure that Assets are completed in line with National Standards.

The results of this study generally support the application of OGRS 3 in the youth justice system for predicting risk of re-offending, which was also being proposed as part of the YJB review of assessment and intervention planning.

These conclusions should be considered in the light of the limitations (see section 2 of this report for further details). In particular, this analysis was based on proven re-offending, and as such may underestimate the actual number of re-offences committed by young people.

A next step could be to explore whether a **substantially** better measure of youth risk of re-offending could be developed by incorporating additional variables, such as protective factors, or introducing weighted variables. It would also be sensible to wait until two-year re-offending data are available, to take account of more severe re-offences which may take longer to occur or convict (as was found for a cohort of adult offenders – see Ministry of Justice, 2010b), and for a long enough period to have elapsed for DTOs to be included.

The current analysis used OGRS 3. OGRS is updated regularly and the analysis should be repeated with the latest version, OGRS 4 (Howard and Moore, in press), which is likely to be implemented in 2012 and is expected to test its validity among young people.

5. Additional resources

Readers interested in researching further issues touched on in this paper are directed to the following websites/sources of information.

Department for Education

<http://www.education.gov.uk/>

Department of Health

<http://www.dh.gov.uk/en/index.htm>

HM Inspectorate of Prisons

<http://www.justice.gov.uk/about/hmi-prisons/>

HM Inspectorate of Probation

<http://www.justice.gov.uk/about/hmi-probation/>

Ministry of Justice research

<http://www.justice.gov.uk/publications/research-and-analysis/index.htm>

National Offender Management Service (NOMS)

<http://www.justice.gov.uk/about/noms/>

Youth Justice Board

<http://www.justice.gov.uk/about/yjb/>

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7. Glossary

ANOVA

Analysis of Variance (ANOVA) is a statistical method for comparing the difference between two or more groups.

Area Under the Curve (AUC) statistic

The AUC is a standard statistical measure of predictive validity. Here, the AUC scores showed whether higher Asset scores represented a higher likelihood of re-offending. "In practical terms, the statistic is equivalent to the probability that a randomly selected proven re-offender has a higher score than a randomly selected non re-offender. AUCs of 0.5 are the practical minimum as these could be obtained randomly, while AUCs of 1 represent the hypothetical situation where all proven re-offenders have higher scores than non-proven re-offenders." (Debidin, 2009, p.139).

Asset

Risk assessment tool used by all youth offending teams in England and Wales. It includes a number of static and dynamic factors. As noted by Baker (2004), Asset is not an acronym.

Binary Logistic Regression Model

A statistical technique that models the relationship between a dichotomous (binary) outcome (e.g. re-offending) and a set of explanatory variables (e.g. risk factors). See Hosmer and Lemeshow (2000) for further information.

CAMHS

Child and Adolescent Mental Health Services.

CAF

The Common Assessment Framework (CAF) is used across children's services for young people where there is a concern for a young person's welfare. The CAF measures aspects of the young person's development, education, and family, and wider environmental factors.

CJS

Criminal justice system.

Community disposals

This is an umbrella term used to refer to the following orders made at court: Attendance Centre Order, Action Plan Order, Drug Treatment and Testing Order, Curfew Order, Supervision Order, Community Rehabilitation Order, Community Punishment Order, Community Punishment and Rehabilitation Order and the Youth Rehabilitation Order.

Custodial sentence

This is an umbrella term used to refer to the following custodial sentences made at court: Detention and Training Order, Section 90, Section 91, Section 226 and Section 228.

Detention and Training Order (DTO)

Detention and Training Orders (DTOs) are custodial sentences, which can last from 4 months to 24 months. A young person spends the first half of the order in custody and the second half released on licence. Should they offend while on licence, they may be recalled back to custody.

Disposal

Disposal is an umbrella term referring both to sentences given by the court and pre-court decisions made by the police. Disposals may be divided into four separate categories, of increasing seriousness, starting with pre-court disposals then moving into first-tier and community-based penalties, through to custodial sentences.

Dynamic factors

Those factors which are dynamic in nature and can change over time, such as living arrangements.

Effect size

Effect size measures the strength of the relationship between two variables, for example Asset score and re-offending. Cohen (1988) categorised (eta squared) effect size into three bandings: small = .01; medium = .06; large = .14.

Final Warning

A Final Warning is a formal verbal warning given by a police officer to a young person who admits their guilt for a first or second offence. See

<http://www.justice.gov.uk/guidance/youth-justice/courts-and-orders/disposals/final-warning.htm>.

First-tier penalty

This is an umbrella term used for the following orders made at court: bind over, Compensation Orders, discharges, fines, Referral Orders, Reparation Orders and deferred sentences.

Index disposal

The disposal that made the young person eligible for inclusion in the JCS cohort.

JCS

Juvenile Cohort Study.

OASys

Offender Assessment System (OASys) is a risk assessment and management tool used by prison and probation staff in England and Wales. It contains both static and dynamic factors.

Odds ratio

Odds ratios measure the degree to which one variable influences another.

OGRS 3

The Offender Group Reconviction Scale 3 is a static risk predictor. The methodology for computing OGRS 3 values is detailed in Howard *et al* (2009). OGRS 3 comprises the following variables: age and gender; the type of offence for which the offender has currently been cautioned or convicted; the number of times the offender has previously been cautioned and convicted; and the length and intensity, in years, of their recorded criminal history.

ONSET

Onset is an assessment tool used by YOTs for children and young people coming to the attention of authorities. It is used to assess the risk of future offending or antisocial behaviour.

PCL-Y

Psychopathy Checklist – Youth version, which is used to identify psychopathic traits in young people aged 12–18.

Police National Computer

The Police National Computer (PNC) is the police's administrative IT system, used by all police forces in England and Wales and managed by the National Policing Improvement Agency. As with any large-scale recording system, the PNC is subject to possible errors with data entry and processing. The Ministry of Justice maintains a database based on weekly extracts of selected data from the PNC in order to compile statistics and conduct research on re-offending and criminal histories. The PNC largely covers recordable offences – these are all indictable and triable-either-way offences, plus many of the more serious summary offences. All figures derived from the Ministry of Justice's PNC database are likely to be revised as more information is recorded by the police. (Adapted from Ministry of Justice, 2010b, p.142)

Post hoc test

A post hoc test can be performed to check for statistically significant differences between pairs of groups after the ANOVA analysis has found a significant effect. The Tukey HSD (Honestly Significant Difference) test is a particular type of post hoc test.

Pre-sentence report

This is a report to the sentencing magistrates or judges, containing background information about the crime and the defendant and a recommendation on the sentence, to assist them in making their sentencing decision.

Proven re-offending

“A re-offence is defined as any offence committed in the follow-up period proven by a court conviction or an out-of-court disposal.” (Ministry of Justice, 2011b, p.1)

Referral Order

When a young person pleads guilty to an offence and appears in court for the first time, then the court has to make a Referral Order. The only exception to this is if the offence is so serious that it merits a custodial sentence (DTO, Section 90/91, Section 226 or Section 228) or so minor that a fine or absolute discharge may be given.

The order requires the young person to attend a youth offender panel consisting of a YOT representative and two lay members. The panel agrees a contract with the young person lasting between 3 and 12 months. The contract will include reparation and a number of interventions felt suitable for that young person (for example, a substance misuse assessment, anger management, etc.). If completed successfully, the Referral Order is considered a 'spent' conviction and need not be declared.

Reparation Order

Reparation Orders require a young offender to undertake reparation, either directly for the victim or for the community at large (for example, cleaning up graffiti or undertaking community work).

SAVRY

Structured Assessment for Violence Risk in Youth, which is used to assess the risk of young people committing violent offences.

Scaled Approach

A tiered approach to intervening with young people to reduce re-offending, which is based on the assessment of risks and needs using the Asset tool. The Scaled Approach was formally introduced in England and Wales in 2009.

Section 90 of the Criminal Court Sentencing Act 2000

Any young person convicted of murder is sentenced under Section 90.

Section 91 of the Criminal Court Sentencing Act 2000

Equivalent to a discretionary life sentence, the indeterminate Section 91 sentence is for young people convicted of an offence other than murder for which a life sentence may be passed on an adult. The court may, if appropriate, sentence a young person to detention for life.

The court may impose a determinate custodial sentence under Section 91 for:

- serious, non-specified offences where the maximum sentence as an adult is 14 years or more;
- specified offences where the young person is not determined dangerous.

Section 226 (detention for life and detention for public protection) of the Criminal Justice Act 2003

This is a sentence of 'detention for public protection', imposed if the court decides that, on the basis of the risk presented by the young person, an extended sentence would be inadequate to protect the public.

Section 228 of the Criminal Justice Act 2003

For specified offences where the young person is assessed as dangerous, the court can impose an extended sentence for public protection. The extension applies to the licence period and does not affect the length of the custodial term.

Standard deviation

The standard deviation is a measure of the average dispersion of the data around the mean.

Standard error

The standard error gives an estimate of the uncertainty about a calculated value. The smaller the standard error, the more confidence that the reported value is the 'true' value.

Static factors

Factors such as offender characteristics that cannot be altered, e.g. age of first offence.

Statistically significant

Something is considered to be statistically significant if (upon applying a statistical test) it is unlikely to have occurred simply by chance.

YJMIS

Youth Justice Management Information System. This system contains case-level data on young people on the YOT caseload.

YOT

Youth offending teams (YOTs) are multi-agency teams made up of representatives from police, probation, education, health and social services, and specialist workers, such as accommodation officers and substance misuse workers.

Young person

In this publication, 'young person' covers people aged 10–17.

Youth Rehabilitation Order (YRO)

The Youth Rehabilitation Order (YRO) was introduced at the end of November 2009. The YRO provides judges and magistrates with a choice of 18 rigorous community options from which they can create a sentence specifically designed to deal with the circumstances of the young offender before them. The 18 requirements possible on a YRO are: supervision, curfew, activity, unpaid work, attendance centre order, electronic monitoring, programme, education, exclusion, drug treatment, prohibited activity, intoxicating substance treatment, residence, drug testing, mental health treatment, intensive fostering, Local Authority residence and intensive surveillance and supervision.

Appendix 1

Other risk assessment tools used in England and Wales

There are a number of other assessment tools used for young people who are in contact with children's services. The ones detailed below are by no means an exhaustive list.

Onset

Onset⁶¹ is completed by YOTs and is used for children and young people who have come to the attention of authorities and who are at risk of future offending or antisocial behaviour. The Onset assessment framework mirrors the 12 sections included in Asset. However, here practitioners rate the likelihood of offending, and not re-offending as in Asset. Onset is predominately used to inform preventative intervention work and to review progress against the intervention plan. There are no studies to date assessing its predictive validity.

Common Assessment Framework (CAF)

The CAF⁶² is a measure used across children's services, in particular where there is concern for a young person's welfare and well-being, or where the young person has unmet needs. It is used for children, including unborn babies, and young people up to the age of 18 years. The CAF process is voluntary, and informed consent from the parents/carers and the child is required. A brief pre-assessment checklist determines whether a full CAF assessment is needed. The CAF covers relevant information about aspects of a child's/young person's physical, cognitive and emotional development, learning and educational attainment, their parents or carers, and wider information about family and environmental factors which could have an adverse effect on the child's development. The CAF is not intended to be a predictive measure, and evaluations have mainly focused on the process (e.g. Brandon *et al*, 2006).

⁶¹ See <http://www.yjb.gov.uk/en-gb/practitioners/Assessment/Onset.htm>

⁶² See <http://www.yjb.gov.uk/en-gb/practitioners/Assessment/CommonAssessmentFramework/>

For young people on the YOT caseload who have had a previous CAF assessment, this information can be used to inform their Asset. As part of the consultation on the assessment and intervention framework, the YJB proposed better alignment of Asset with CAF.

Other tools

There are also a variety of other more complex and less regularly used measures in England and Wales. For example, the Structured Assessment for Violence Risk in Youth (SAVRY), developed by Borum, Bartel and Forth,⁶³ aims to assess the risk of young people committing violent offences. The Psychopathy Checklist: Youth Version (PCL-Y) developed by Forth, Kosson and Hare⁶⁴ aims to identify psychopathic traits in young people aged 12 to 18.

OASys

The adult equivalent of Asset is the Offender Assessment System (OASys), the main assessment tool used for adult offenders by the National Offender Management Service (NOMS) in England and Wales. OASys was introduced in 2001, and includes 40 questions for scoring OGRS 3, the OASys General Re-offending Predictor (OGP), the OASys Violence Predictor (OVP), and eight criminogenic needs (accommodation, employability, relationships, lifestyle and associates, drug misuse, alcohol misuse, thinking and behaviour, and attitudes). OASys also includes a risk of serious harm, sentence planning, and self-assessment section. Howard (2009) has shown that OGRS 3 is a good predictor of all re-offending, but when the necessary information on dynamic risk factors is completed, OGP is a better predictor of non-violent re-offending and OVP is a better predictor of violent re-offending.⁶⁵

⁶³ <http://www.hogrefe.co.uk/?/test/show/198/>

⁶⁴ <http://www.hare.org/scales/pclyv.html>

⁶⁵ Howard (2009) found that OGP improved AUC for non-violent offending to 80%, compared with 78% for OGRS 3 and 76% for the previous OASys score. OVP improved AUC for violent reoffending to 74%, compared with 70% and 68% respectively (based on a 24-month reoffending rate).

Appendix 2

Juvenile Cohort Study (JCS)

The Juvenile Cohort Study (JCS) was a joint initiative by the Ministry of Justice (MoJ) and the Youth Justice Board (YJB). The fieldwork was conducted by Morgan Harris Burrow (MHB) in association with researchers from the University of Surrey and the University of Oxford. In particular, the JCS aimed to provide answers to the following questions.

- What was the profile of the cohort of juvenile offenders in terms of their risks, needs, offence histories and protective factors?
- What types of interventions had they received, and how well were they matched to the offenders' needs (as identified via Asset)?
- How strongly may interventions be associated with subsequent changes in risk scores (as measured by Asset)?
- Which aspects of the interventions that young people received, their case managers believed were most useful in addressing their offending behaviour, why these interventions were considered useful, and whether interventions were delivered as reported in the administrative systems.

The JCS comprised records of 13,975 young people, which were drawn from the case management systems of 30 participating youth offending teams (YOTs) in England and Wales. Initially, the aim was to randomly select 30 YOTs to participate. However, when some YOTs were unable to take part, further YOTs were specially targeted, which had characteristics similar to the ones which had refused to take part. All the young people were subject to YOT supervision during 1 February 2008 to 31 January 2009, between the ages of 10 and 17 years old, normally resident in the YOT area, and had received a sentence which made them eligible for inclusion in the cohort.⁶⁶

The JCS collected information on the characteristics of young people in terms of their needs, risks, and the interventions they received. The cohort study design enabled

⁶⁶ Eligible disposals included Final Warnings, Referral Orders, Reparation Orders, Action Plan Orders (APOs), Attendance Centre Orders (ACOs), Community Punishment Orders (CPOs), Community Punishment and Rehabilitation Orders (CPROs), Community Rehabilitation Orders (CROs), Curfew Orders, Supervision Orders, and Detention and Training Orders (DTOs). Only disposals which led to YOT interventions with the young person, as identified by the JCS feasibility study, were included.

the follow-up of re-offences of this particular group through the MoJ's version of the Police National Computer (PNC).

The JCS was one of three major cohort studies managed by the MoJ which aim to get a better understanding of different parts of the criminal justice system. The Surveying Prisoner Crime Reduction (SPCR) cohort survey collected data on adult prisoners at the start of, during and after serving a prison sentence of up to four years (Stewart, 2008; Ministry of Justice, 2010b). The Offender Management Community Cohort Study (OMCCS) focused on offenders who were under supervision by Probation Services while serving a community sentence.

Total JCS cohort characteristics

The JCS cohort had the following characteristics (see Table A.2): males accounted for 80% of the cohort; 20% were female. In age, 5% were 10–12, 42% were 13–15, and 53% were 16–17 years old. The mean age was 15.3 years.

The majority were White (86%), 5% were Black/Black British, 3% Asian/Asian British, 4% Mixed, and less than 1% were Chinese or Other. Ethnicity was unknown for 1%.⁶⁷ And 40% of the cohort received a Final Warning; 30% received a Referral Order, while only 4% were given a Detention and Training Order.

JCS representativeness

JCS total cohort

The JCS cohort was compared to the national population of young people (in the case of ethnicity) and national offences by gender and age as reported in the 2008/09 Youth Justice Annual Workload data (Youth Justice Board, 2010c). See Table A.1 for comparisons between the JCS cohort/JCS subsamples and the youth justice workload statistics for 2008/09.

The cohort was found to be broadly representative of the demographics of young people with a proven offence in England and Wales. The cohort was statistically representative of young people with a proven offence in England and Wales with regard to gender. However, statistical tests showed that the JCS cohort was

⁶⁷ It is worth noting that ethnicity was recorded as defined by the young person.

significantly older and included a higher proportion of White young people, although these differences were small in absolute terms.

As part of the JCS sampling strategy, only disposals which led to YOT interventions or supervision were included, and more serious custodial disposals⁶⁸ were excluded because of the longer wait necessary until the start of the follow-up period upon release.

The JCS was therefore less representative in terms of individual disposals. In particular, the number of Referral Orders was disproportionately high: 30% in the JCS compared to 14% nationally.

However, the JCS cohort reflected the national proportions of the four main disposal categories:⁶⁹ pre-court (40% vs 41% nationally), first-tier (33% vs 35% nationally), community (23% vs 21% nationally), and custody (4% vs 3% nationally).

Table A.1: Percentage of young people by gender, age and ethnicity for JCS cohort and JCS subsamples compared to YJB workload statistics 2008/09

	Gender (% male)	Age (% aged 10–14 years)	Ethnicity (% White)
YJB workload statistics 2008/09 (total caseload)	79%	29%	84%
YJB workload statistics 2008/09 (only JCS disposals included)	81%	27%	84%
YJB workload statistics 2008/09 (only sentenced JCS disposals included, excluding DTOs)	83%	24%	83%
JCS – total cohort (n=13,975)	80%	26%	86%
JCS – total sample with valid Assets, matched to the PNC, excluding DTOs (n=7,621)	80%	26%	87%
JCS – sentenced sample with valid Assets, matched to the PNC, excluding DTOs (n=5,126)	82%	21%	85%

⁶⁸ i.e. sections 90; 91; 226; and 228.

⁶⁹ There are four disposal categories, of increasing seriousness: pre-court (Police Reprimand, Final Warning), first-tier (Absolute Discharge, Bind Over, Compensation Order, Conditional Discharge, Fine, Referral Order, Reparation Order, Sentence Deferred), community (Action Plan Order, Attendance Centre Order, Community Punishment and Rehabilitation Order, Community Punishment Order, Community Rehabilitation Order, Community Rehabilitation Order and Conditions, Curfew Order, Drug Treatment and Testing Order, Supervision Order, Supervision Order and Conditions), custody (Detention and Training Order – four months, Detention and Training Order – four months to two years, Section 90-91, Section 226 – detention for life, Section 226 – detention for public protection, Section 228). The JCS cohort only includes a sub-set of all possible disposals.

JCS subsamples used for the Asset study

The analysis was based on reduced samples of the JCS cohort (see Table A.3 and Table A.4). The samples were selected based on those young people who were successfully matched to the PNC and had a valid Asset assessment recorded (all 12 sections rated, and completed within 30 days of disposal). The sample including Final Warnings (n=7,621) was, similarly to the overall JCS cohort, broadly representative of the population of young people coming into contact with YOTs in England and Wales.

The 'sentenced' sample (n=5,126), which excluded Final Warnings, was compared to the sentenced national caseload by disposals (only selecting those disposals that were included in the JCS), as published in the Youth Justice Annual Workload data 2008/09. Gender was found to be statistically representative of the sentenced caseload. Age and ethnicity were broadly representative in terms of overall proportions but not statistically representative (see Table A.1).

Interpreting the representativeness

There are limitations to the representativeness analysis that should be borne in mind. The analysis compared individual young people recorded on the JCS against offences or disposals as published in the YJB workload statistics for 2008/2009 (Youth Justice Board, 2010c). Person-level data for this time frame were not available (with the exception of ethnicity). However, a young person may commit more than one offence and receive more than one disposal within the time frame, and therefore could potentially be included a number of times in the total number of offences or disposals.

In addition, the time frame for the YJB workload statistics ran from 1 April 2008 to 31 March 2009 while the JCS data were collected from 1 February 2008 to 31 January 2009.

Table A.2: JCS cohort by disposal type, age, gender and ethnicity

Disposal types	10–12	13–15	16–17	Male	Female	Asian/Asian British	Black/Black British	Chinese or Other	Mixed	White	Not known
	n=13,055. †			n=13,650. †		n=13,975					
Pre-court											
Final Warning	452	2,600	2,226	4,190	1,291	140	194	13	141	5,087	69
Total pre-court disposals	452	2,600	2,226	4,190	1,291	140	194	13	141	5,087	69
First-tier											
Referral Order	130	1,680	2,101	3,281	809	202	263	*	180	3,489	38
Reparation Order	*	170	232	350	90	*	23	*	12	405	*
Total first-tier disposals	139	1,850	2,333	3,631	899	208	286	*	192	3,894	41
Community											
Action Plan Order	13	247	297	481	111	11	18	*	28	538	*
Attendance Centre Order	*	78	130	199	27	*	20	*	*	190	*
Community Punishment and Rehabilitation Order	N/A	N/A	230	222	19	19	32	*	11	181	*
Community Punishment Order	N/A	N/A	274	264	20	12	15	*	14	241	*
Community Rehabilitation Order	N/A	N/A	307	258	60	*	28	*	14	269	*
Curfew Order	*	86	132	194	40	*	10	*	*	211	*
Supervision Order	17	585	596	1,023	243	39	108	*	73	1,062	*
Total community disposals	35	996	1,966	2,641	520	104	231	*	156	2,692	21
Custody											
Detention and Training Order	*	89	368	441	37	32	50	*	33	371	*
Total custodial disposals	*	89	368	441	37	32	50	*	33	371	*
Total	627	5,535	6,893	10,903	2,747	484	761	30	522	12,044	134
Share of total (%)	5%	42%	53%	80%	20%	3%	5%	<1%	4%	86%	1%

Notes:

1. Source: JCS.

2. * Data removed to due extremely low numbers (fewer than ten people).

3. †JCS and PNC records showed some mismatches in terms of age and gender. These were excluded from the analysis.

Table A.3: Asset sample (sentenced people and Final Warnings) characteristics by disposal type, excluding custodial sentences

Disposal types	10–12	13–15	16–17	Male	Female	Asian/Asian British	Black/Black British	Chinese or Other	Mixed	White	Not known
	<i>n=7,272.[†]</i>			<i>n=7,573.[†]</i>		<i>n=7,621</i>					
Pre-court											
Final Warning	216	1,177	995	1,869	597	53	76	*	67	2,248	47
Total pre-court disposals	216	1,177	995	1,869	597	53	76	*	67	2,248	47
First-tier											
Referral Order	86	1,171	1,442	2,266	546	145	132	*	124	2,410	13
Reparation Order	*	113	157	238	60	*	14	*	*	270	*
Total first-tier disposals	94	1,284	1,599	2,504	606	150	146	*	133	2,680	14
Community											
Action Plan Order	*	178	214	354	76	*	10	*	15	393	*
Attendance Centre Order	*	17	22	38	*	*	*	*	*	36	*
Community Punishment and Rehabilitation Order	N/A	N/A	171	166	13	16	21	*	*	131	*
Community Punishment Order	N/A	N/A	122	116	*	*	*	*	*	109	*
Community Rehabilitation Order	N/A	N/A	224	193	37	*	23	*	12	189	*
Curfew Order	*	36	41	69	11	*	*	*	*	71	*
Supervision Order	11	427	433	750	161	34	80	*	51	746	*
Total community disposals	22	658	1,227	1,686	311	73	144	*	96	1,675	*
Total	332	3,119	3,821	6,059	1,514	276	366	11	296	6,603	69
Share of total (%)	5%	43%	53%	80%	20%	4%	5%	>1%	4%	87%	>1%

Notes:

1. Source: JCS sentenced and Final Warning sample. Percentages may not add up exactly to 100 because of independent rounding.

2. * Data removed due to extremely low numbers (fewer than ten people).

3. [†]JCS and PNC records showed some mismatches in terms of age and gender. These were excluded from the analysis.

Table A.4: Asset ‘sentenced’ sample characteristics by disposal type

Disposal types	10–12	13–15	16–17	Male	Female	Asian/Asian British	Black/Black British	Chinese or Other	Mixed	White	Not known
	<i>n=4,884.</i> †			<i>n=5,107.</i> †		<i>n=5,126</i>					
First-tier											
Referral Order	86	1,171	1,442	2,266	546	145	132	*	124	2,410	13
Reparation Order	*	113	157	238	60	*	14	*	*	270	*
Total first-tier disposals	94	1,284	1,599	2,504	606	150	146	*	133	2,680	14
Community											
Action Plan Order	10	178	214	354	76	*	10	*	15	393	*
Attendance Centre Order	*	17	22	38	*	*	*	*	*	36	*
Community Punishment and Rehabilitation Order	*	*	171	166	13	16	21	*	*	131	*
Community Punishment Order	*	*	122	116	*	*	*	*		109	*
Community Rehabilitation Order	*	*	224	193	37	*	23	*	12	189	*
Curfew Order	*	36	41	69	11	*	*	*	*	71	*
Supervision Order	11	427	433	750	161	34	80	*	51	746	*
Total community disposals	22	658	1,227	1,686	311	73	144	*	96	1,675	*
Total	116	1,942	2,826	4,190	917	223	290	*	229	4,355	22
Share of total	2%	40%	58%	82%	18%	4%	6%	<1%	4%	85%	0%

Notes:

1. Source: JCS.

2. * Data removed due to extremely low numbers (fewer than ten people).

3. † JCS and PNC records showed some mismatches in terms of age and gender. These were excluded from the analysis.

Appendix 3

JCS practitioner study

The JCS also included a small-scale programme of qualitative interviews with YOT practitioners conducted by the contractors, Morgan Harris Burrows (MHB). These were conducted to investigate the views of practitioners, to shed light on the context in which they work, and to provide a background to the administrative data collected in the JCS.

Face-to-face interviews, following a common semi-structured interview schedule (see the end of this appendix), were carried out with three to four practitioners in 28 of the 30 YOTs taking part in the JCS. In total, 102 interviews were completed, and of these, 19 interviewees occupied management grades. Those interviewed in each YOT comprised a cross section of practitioners (e.g. caseworkers, those dealing with Intensive Supervision and Surveillance Programmes (ISSPs), and practice managers) designed to represent a reasonable profile of the way each YOT operates. In view of this focus, very few specialist staff, such as those dealing only with reparation issues or substance misuse, were invited to take part. The selection was made in collaboration with the practice manager (or, where no such post existed, a senior caseworker). It recognised that the way in which different YOTs deliver interventions can vary widely, but the study sought to target caseworkers with experience.

While the aim was to provide a reasonable profile of the way each participating YOT operated, the interviews cannot be seen to present the views of all YOT practitioners. This is because the 28 YOTs from which the interviewees were drawn may not be representative of YOTs nationally (however, as we have seen, in demographic terms the 30 JCS YOTs broadly are). But, more importantly, there will have been some selection bias, both in the decision of practice managers in who to propose for interview, as well as in the decision by individuals to consent or refuse to take part.

The following were the findings that specifically related to the Asset risk assessment tool.

Perceptions of Asset in identifying risks or needs

Participants were asked to outline the strengths and weaknesses of Asset for identifying needs and risks. This was asked as an open question, with answers spontaneously given and then coded into categories at a later stage by the contractors. The data show that some interviewees did make more than one comment, and most identified both strengths and

weaknesses. The findings presented should be treated with caution, however, as many more interviewees may have expressed similar views if specifically prompted further.

Strengths

The strengths were considered to be, in particular, around providing a useful checklist (a framework), and that Asset helps to focus thinking (and ensures that all relevant aspects of a young person’s life are covered at an initial stage of contact with the young person). Aligned to this were the views that Asset was comprehensive, and encouraged a holistic view of the young person’s life (see Table A.5).

Table A.5: ‘Strengths’ of Asset perceived by interviewees

Asset strength	Number mentioning:
Useful checklist	15
Comprehensive	13
Focuses thinking	11
Encourages a holistic view	11
Gives a clear measure of re-offending risk	10
Use of evidence to strengthen – broader view	9
Is standardised/consistent	8
Has a sound research basis	7
Useful categorisation	6
Gives a sense of distance travelled (e.g. for court presentations)	5
Uses practitioners’ skills	4
Useful record for other workers, repeat cases	4
Uniformity makes it easier to present to young people and family	3
Good basis for interventions	3

Notes:
 1. n=88 (respondents to this question).
 2. The spontaneous answers to the interview question “*What do you find are the strengths and weaknesses of Asset in identifying risk or need?*” were subsequently coded into these categories (respondents could of course have mentioned more than one of these).

Weaknesses

The perceived weaknesses of Asset that were reported were found more difficult to categorise. Many related to the process of completing the Asset assessment, rather than the issue of identifying needs and risks (see Table A.6). These included: that it could be subjective (interviewees were concerned that workers used different criteria for scoring, and may interpret evidence differently); that it was poorly structured/repetitive and restrictive in its approach; also that it could be time-consuming/lengthy. Also, others remarked that not all of the questions were relevant to all young people, and that, despite its length, there were still areas that were not covered.

Table A.6: ‘Weaknesses’ of Asset identified by interviewees

	Number mentioning:
Subjective (reliant on practitioner skills)	22
Poorly structured/repetitive	18
Restrictive in its approach	17
Time-consuming/lengthy	13
Difficult to obtain accurate information from the young person	10
Scoring confusion	8
Deficit-led	7
Not ‘young person-friendly’	5
Over-reliance	4
Evidence/fallibility	4
Difficult to distinguish risk from welfare	3
Insufficiently strong around vulnerability and community	2
Other	9

Notes:

1. n=88 (respondents to this question).
2. The answers to the interview question “*What do you find are the strengths and weaknesses of Asset in identifying risk or need?*” were subsequently coded into these categories (respondents could of course have mentioned more than one of these).

The areas of Asset most often reported as being difficult to explore with young people, from these interviews, were ‘emotional and mental health’ (31), followed by ‘family and personal relationships’ (25) and ‘perception of self and others’ (24). Difficulties with exploring

'emotional and mental health' were sometimes affected by the limited skills of workers in this area. Issues around 'family and personal relationships' were reported to be prone to concealment by the young person, particularly with regard to domestic violence, abuse, family substance misuse and family offending. The presence of a parent in the interview was also seen as a compounding factor by some interviewees. Some practitioners felt that difficulties with 'perception of self and others' were related to a reluctance to disclose discriminatory attitudes and a lack of self awareness.

The next grouping of difficult areas included 'substance misuse' (17), 'thinking and behaviour' (15) and 'neighbourhood' (13). Difficulties exploring problems around substance misuse could be related to the presence of a parent in the interview or the young person withholding information. 'thinking and behaviour' was considered difficult to assess in the initial stages of contact, and 'neighbourhood' was difficult to assess without sufficient knowledge of the area in question.

For every Asset category that was reported to be difficult to explore, however, there were other interviewees reporting them to be straightforward. Influencing factors included the young person's attitude during the assessment, plus the worker's own experience and training. Interviewees overwhelmingly reported that Asset was the primary basis for putting together an intervention plan. Equally, it was reported that the priorities attached to different elements in a plan were based on Asset scorings.

The Asset areas interviewees found most difficult to address through their work related to 'family and personal relationships' and 'living arrangements'. Overall, many of the difficulties arose in areas such as these, which were not 'in the gift of the YOT'. Further difficulties arose from structural difficulties, gaps in services, poor or overstretched services and poor partnerships.

Interviews with YOT practitioners: parts of the interview schedule relating to Asset/assessment

Assessment of needs and formulating intervention plans

What do you find are the strengths and weaknesses of Asset in identifying risk or need?

Do you find some sections more difficult than others to explore?

Which ones do you find difficult and why?

Do you find some sections easier to explore than others? Which ones and why?

- Thinking and behaviour
- Lifestyle
- Family and personal relationships
- Attitudes to offending
- Education, training and employment
- Substance misuse
- Motivation to change
- Perception of self and others
- Emotional and mental health
- Living arrangements
- Neighbourhood
- Physical health

Which of the needs identified by Asset are the most difficult to address through your work?

- Thinking and behaviour
- Lifestyle
- Family and personal relationships
- Attitudes to offending
- Education, training and employment
- Substance misuse
- Motivation to change
- Perception of self and others
- Emotional and mental health
- Living arrangements
- Neighbourhood
- Physical health

Why do you think this is?

Appendix 4

Offending history of sample

Of the 7,621 young people in the sentenced and Final Warning sample, 82% (6,234) had committed at least one offence prior to the 'index offence' that made them eligible for inclusion in the JCS cohort. The total number of previous offences committed was 25,477.

First time entrants, who had not committed any offences prior to the index offence, accounted for 18% (1,387); 23% (1,761) did not have any previous reprimand, caution or warning; and 71% (5,440) did not have any convictions prior to their index offence.

Table A.7 shows the breakdown of age at first reprimand/caution/warning and age at first conviction. If young people did not have a previous out-of-court disposal or conviction, the age at the time of their index disposal was taken. The average age at first reprimand was 13 years; the average age at first conviction was 15 years.

Table A.7: Age at first reprimand/caution/warning and conviction (n=7,272)

Age	Reprimand/caution/warning		Conviction	
	Frequency	Percentage	Frequency	Percentage
10	370	6%	38	1%
11	582	9%	103	2%
12	991	16%	284	6%
13	1,228	20%	617	13%
14	1,252	20%	908	18%
15	988	16%	1,124	23%
16	570	9%	996	20%
17	214	3%	846	17%
Total	6,195*	100%	4,916*	100%

Notes:

1. Source: JCS. The sample excluded cases where there was not a match between the ages recorded on the PNC and the JCS.
2. * Numbers do not add up to the total number of people in the sample, as some young people never received a conviction and therefore do not have an age at first conviction, or may have received a conviction without a prior out-of-court disposal and therefore do not have an age at first reprimand/caution/warning.
3. Reprimands and warnings replaced cautions for juveniles from 1st June 2000.

Appendix 5

Accuracy in predicting one-year proven re-offending based on Asset dynamic score out of 48

Accuracy in predicting proven offending (yes/no measure)

The average Asset score for those who re-offended was higher compared to the score for those who did not re-offend (see Table A.8).

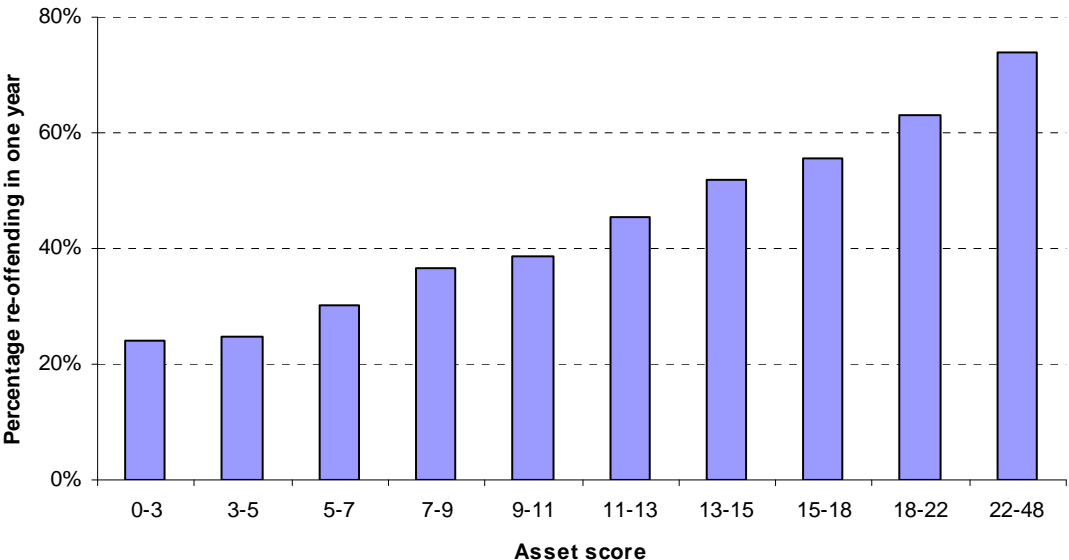
Table A.8: Difference in Asset ‘dynamic (48)’ score between re-offenders and non re-offenders (n=7,621)

	Number of people	Mean Asset score	Std. deviation
Re-offended	3,381	14.5	7.7
Not re-offended	4,240	9.8	6.3

- Notes:
1. Source: JCS.
 2. $t(7,619) = 29.3, p < .001$.
 3. Effect size eta squared = .10.

Figure A.1 shows that a larger proportion of young people with higher Asset scores re-offended compared to those with lower Asset scores.

Figure A.1: Percentage of proven re-offending by Asset ‘dynamic (48)’ score band (ranging from 0–48)⁷⁰



⁷⁰ The sample was split into ten equal sized groups (deciles), based on the total Asset score, i.e. each decile contained 10% of people. As the data were grouped by the exact percentage of people in each group, Asset scores on the cut-off point for one decile could be included in two neighbouring deciles.

Accuracy in predicting frequency of proven offending

Young people who had more than three re-offences had, on average, a higher Asset score than those who committed one to three re-offences (see Table A.9). These results are in line with Baker *et al* (2003).

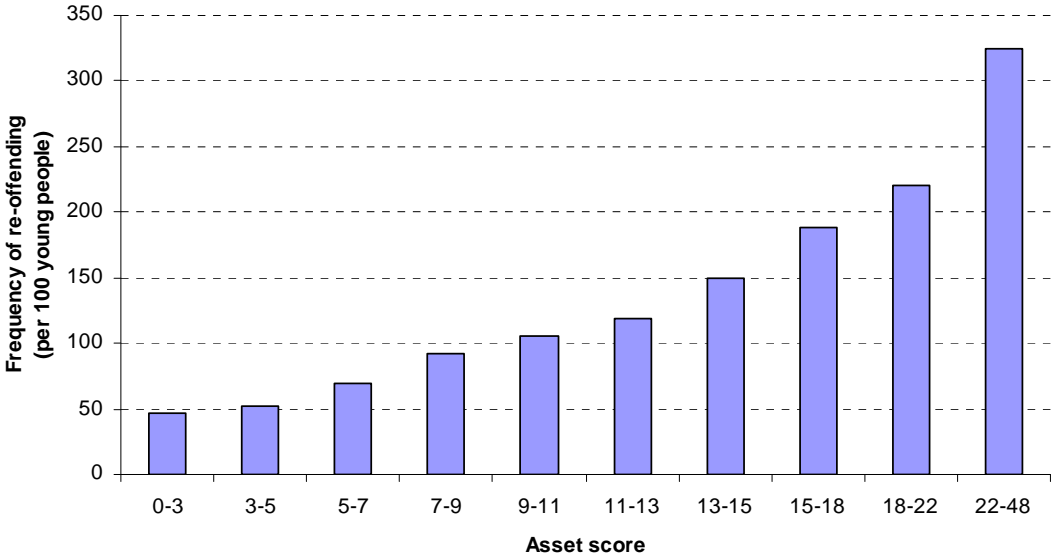
Table A.9: Difference in Asset ‘dynamic (48)’ score by number of proven re-offences (n=3,381)

	Number of people	Mean Asset score	Std. deviation
1–3 re-offences	2,401	13.3	7.3
> 3 re-offences	980	17.2	7.9

- Notes:
1. Source: JCS.
 2. $t(3,397) = -13.7p < .001$.
 3. Effect size eta squared = .05.

The frequency rate shows a strong positive association between Asset score and frequency of re-offences, with frequency rates being much higher among those in the highest three score bands (see Figure A.2).

Figure A.2: Frequency of proven re-offending per 100 young people by Asset ‘dynamic (48)’ score band (ranging from 0–48)⁷¹



⁷¹ The sample was split into ten equal sized groups (deciles) based on the total Asset score, i.e. each decile contained 10% of people. As the data were grouped by the exact percentage of people in each group, Asset scores on the cut-off point for one decile could be included in two neighbouring deciles.

Accuracy in predicting severity of proven re-offending

There was a statistically significant difference in Asset scores across the offence groups (See Table A.10). These findings differ from those found in the previous Asset predictive validity studies: Baker *et al* (2003) did not find significant results, and the results found by Baker *et al* (2005) were not as highly statistically significant.

- The mean score for those whose most serious re-offence was categorised as ‘serious violence and sexual offences’⁷² was statistically significantly higher than for those whose most serious re-offence was considered as ‘non-serious’.
- The mean score for those whose most serious re-offence was ‘serious acquisitive’ was statistically significantly higher than those whose most serious re-offence was considered as ‘non-serious’.
- There were no statistically significant differences in Asset scores between the ‘serious violence and sexual offences’ and ‘serious acquisitive’ re-offenders.

Table A.10: Difference in Asset ‘dynamic (48)’ score by most serious re-offence (n=3,381)

	Number of people	Mean Asset score	Std. deviation
Serious violence and sexual offences	63 [†]	17.5	9.1
Serious acquisitive offences	554	17.0	7.9
Non-serious offences	2,764	13.9	7.5

Notes:

1. Source: JCS.

2. ANOVA: $F(2, 3378) = 43.1, p < .001$. There was a significant difference in mean Asset scores between a) those whose most serious proven re-offence was ‘serious violence and sexual offences’ and non-serious offences, and b) those whose most serious re-offence was ‘serious acquisitive offences’ and non-serious offences. There was no significant difference between those whose most serious offence was ‘serious violence and sexual offences’ and ‘serious acquisitive offences’.

3. Post hoc Tukey test was used.

4. Effect size eta squared = .02.

[†] Caution should be applied to these findings, given the small number of serious violence and sexual offences.

Table A.11 shows that there were statistically significant differences in mean Asset scores between all the disposal categories: the more serious the disposal, the higher the Asset score. These findings are broadly in line with those found by Baker *et al* (2003, 2005).

⁷² Caution should be applied to these findings, given the small number of serious violence and sexual offences.

Table A.11: Difference in Asset 'dynamic (48)' score by most punitive criminal justice re-offence disposal (n=3,381)

	Number of people	Mean Asset score	Std. deviation
Custody	163	18.3	7.2
Community penalty	872	15.4	7.4
Other	2,346	13.9	7.7

Notes:

1. Source: JCS.

2. ANOVA: $F(2, 3378) = 33.9, p < .001$. There were significant differences in mean Asset scores between all of the groups.

3. Post hoc Tukey test was used.

4. Effect Size eta squared = .02.

Appendix 6

Asset scores and re-offending of subgroups (‘sentenced’ sample n=5,126)

Table A.12: Females: difference in mean Asset simulated ‘static plus dynamic (64)’ score between re-offenders and non re-offenders (n=923)

	Number of people	Mean Asset score	Std. deviation
Re-offended	359	24.3	9.5
Not re-offended	564	16.9	8.3

Notes:

1. Source: JCS.
2. $t(921) = -12.6, p < .001$.
3. Effect size eta squared = .15.

Table A.13: Young people aged 10–15 years:⁷³ difference in mean Asset simulated ‘static plus dynamic (64)’ score between re-offenders and non re-offenders (n=2,184)

	Number of people	Mean Asset score	Std. deviation
Re-offended	1,157	23.1	9.3
Not re-offended	1,027	16.8	8.4

Notes:

1. Source: JCS.
2. $t(3,2182) = -16.5, p < .001$.
3. Effect size eta squared = .11.

Table A.14: Black and minority ethnic young people: difference in mean Asset simulated ‘static plus dynamic (64)’ score between re-offenders and non re-offenders (n=749)

	Number of people	Mean Asset score	Std. deviation
Re-offended	369	22.4	9.2
Not re-offended	380	15.4	8.9

Notes:

1. Source: JCS
2. $t(747) = -10.6, p < .001$
3. Effect Size eta squared = .13

⁷³ Age group in line with Baker *et al* (2003).

Appendix 7

Logistic regression: Asset ‘dynamic (model)’ on re-offending (construction sample, which includes sentenced and Final Warning cases)

The column ‘odds ratio’,⁷⁴ refers to a measure of effect size,⁷⁵ for the predictor variables.

Table A.15: Logistic regression: Asset ‘dynamic (model)’ on re-offending (construction sample n=5,054, which includes sentenced and Final Warning cases)

Predictor	Logistic coefficient	Wald	Significance	Odds ratio
<i>Dynamic predictors</i>				
1. Living arrangements	0.10	5.17	0.02*	1.10
2. Family and personal relationships	0.10	6.26	0.01*	1.10
3. Education, training and employment	0.08	5.33	0.02*	1.08
4. Neighbourhood	0.07	3.56	0.06	1.08
5. Lifestyle	0.20	24.91	0.00***	1.22
6. Substance use	0.12	14.06	0.00***	1.12
7. Physical health	0.09	2.23	0.14	1.10
8. Emotional and mental health	0.00	0.01	0.94	1.00
9. Perception of self and others	0.00	0.00	0.95	1.00
10. Thinking and behaviour	0.02	0.13	0.71	1.02
11. Attitudes to offending	0.01	0.06	0.81	1.01
12. Motivation to change	0.31	44.85	0.00***	1.36
Constant	-1.26	299.21	0.00	0.28

1. Source: JCS.

2. Nagelkerke $R^2 = .144$.

3. Asterisks indicate whether factors differ significantly. Significance level: * < .05 ** < .01 *** < .001.

For the logistic regression model including the Asset 12 dynamic factors, ‘lifestyle’, ‘substance use’ and ‘motivation to change’ were highly statistically significant predictors of re-offending. ‘Living arrangements’, ‘family and personal relationships’ and ‘education,

⁷⁴ See Glossary for explanation.

⁷⁵ See Glossary for explanation.

training and employment' were also statistically significant.⁷⁶ Baker *et al* (2003) found 'lifestyle', 'living arrangements', 'substance use' and 'education, training and employment' (but not 'motivation to change' or 'family and personal relationships') to be significant predictors of reconvictions in their regression model.

It is important to note that the scores on the 12 sections of Asset are assessor ratings. The risk factors, which were found not to be significant predictors of re-offending, could either not be predictive of recidivism or, alternatively, the risk factor failed to predict re-offending because it was being rated unreliably. The AUC for Asset dynamic factors only was 0.69 based on the validation sample (n=2,172 containing sentenced and Final Warning cases). Related to this, in the small-scale exploratory programme of qualitative interviews with YOT practitioners conducted as part of the JCS, respondents were asked whether some sections of Asset were more difficult to explore than others. The areas most often reported as being difficult to explore with young people were 'emotional and mental health', followed by 'family and personal relationships' and 'perception of self and others'. The Asset areas interviewees found most difficult to address in their work related to 'family and personal relationships' and 'living arrangements'. As noted earlier, however, the interviews cannot be seen to represent the views of all YOT practitioners.

⁷⁶ The section 'lifestyle' explores whether the young person has age-inappropriate friendships, associations with pro-criminal peers, lack of structure during spare time, and other problems such as gambling, and 'motivation to change' covers the young person's awareness of their problems and willingness to desist. 'Living arrangements' covers the type and suitability of accommodation. 'Family and personal relationships' explores who the young person has contact with and types of problems they may have experienced, e.g. violence or bereavement. 'Substance use' covers the types of substances used, when used and age at first use. 'Education, training and employment' covers their current ETE situation and educational attainment.

Appendix 8

Logistic regression: Asset 'static (model)' on re-offending (construction sample, which includes sentenced and Final Warning cases)

The column 'odds ratio',⁷⁷ refers to a measure of effect size,⁷⁸ for the predictor variables.

Table A.16: Logistic regression: Asset 'static (model)' on re-offending (construction sample n=5,054, which includes sentenced and Final Warning cases)⁷⁹

Predictor	Logistic coefficient	Wald	Significance	Odds ratio
Offence type				
Other		<i>Reference category</i>		
Motoring offences/vehicle theft/ unauthorised taking	-0.23	1.45	0.23	0.79
Burglary (domestic and non-domestic)	0.25	6.62	0.01**	1.28
Age at first reprimand/caution/warning				
No previous		<i>Reference category</i>		
13–17	0.73	85.40	0.00***	2.07
10–12	0.87	91.75	0.00***	2.39
Age at first conviction				
No previous conviction		<i>Reference category</i>		
14–17	1.63	159.56	0.00***	5.08
10–13	1.62	146.81	0.00***	5.04
Number of previous convictions				
No previous convictions		<i>Reference category</i>		
1–3	-0.83	41.02	0.00***	0.44
4 or more		<i>removed due to high correlation with age at first conviction</i>		
Constant	-1.16	273.18	0	0.31

1. Source: JCS.

2. Nagelkerke R² = .131.

3. Asterisks indicate whether factors differ significantly. Significance level: * < .05 ** < .01 *** < .001.

The AUC for Asset static factors only was 0.65 based on the validation sample (n=2,172 containing sentenced and Final Warning cases).

⁷⁷ See Glossary for explanation.

⁷⁸ See Glossary for explanation.

⁷⁹ The logistic regression model rejected those with four or more previous convictions due to the low sample size (70% of the construction sample had no previous convictions, and hence no age at first conviction) and the high correlation with age at first conviction.

Appendix 9

Logistic regression: Asset ‘static plus dynamic (model)’ on re-offending (construction sample, which includes sentenced and Final Warning cases)

The column ‘odds ratio’,⁸⁰ refers to a measure of effect size,⁸¹ for the predictor variables.

Table A.17: Logistic regression: Asset ‘static plus dynamic (model)’ on re-offending (construction sample n=5,054, which includes sentenced and Final Warning cases)⁸²

Predictor	Logistic coefficient	Wald	Significance	Odds ratio
<i>Dynamic predictors</i>				
1. Living arrangements	0.04	0.87	0.35	1.04
2. Family and personal relationships	0.07	2.95	0.09	1.07
3. Education, training and employment	0.06	3.27	0.07	1.06
4. Neighbourhood	0.07	3.07	0.08	1.07
5. Lifestyle	0.16	15.16	0.00***	1.17
6. Substance use	0.07	4.29	0.04*	1.07
7. Physical health	0.09	2.05	0.15	1.10
8. Emotional and mental health	-0.02	0.17	0.68	0.98
9. Perception of self and others	-0.01	0.03	0.87	0.99
10. Thinking and behaviour	0.02	0.16	0.69	1.02
11. Attitudes to offending	0.01	0.02	0.89	1.01
12. Motivation to change	0.27	33.55	0.00***	1.31

⁸⁰ See Glossary for explanation.

⁸¹ See Glossary for explanation.

⁸² The logistic regression model did not report on those with four or more previous convictions due to the low sample size (70% of the construction sample had no previous convictions, and hence no age at first conviction) and the high correlation with age at first conviction.

Predictor	Logistic coefficient	Wald	Significance	Odds ratio
Static predictors				
Offence type				
Other		<i>Reference category</i>		
Motoring offences/ vehicle theft/ unauthorised taking	-0.14	0.49	0.48	0.87
Burglary (domestic and non-domestic)	0.18	3.50	0.06	1.20
Age at first reprimand/caution/warning				
No previous		<i>Reference category</i>		
13–17	0.67	67.26	0.00***	1.95
10–12	0.77	66.98	0.00***	2.16
Age at first conviction				
No previous conviction		<i>Reference category</i>		
14–17	1.05	59.23	0.00***	2.86
10–13	0.99	47.34	0.00***	2.69
Number of previous convictions				
No previous convictions		<i>Reference category</i>		
1–3	-0.57	18.19	0.00***	0.57
4 or more		<i>removed due to high correlation with age at first conviction</i>		
Constant	-1.76	328.85	0.00	0.17

1. Source: JCS.

2. Nagelkerke $R^2 = .192$.

3. Asterisks indicate whether factors differ significantly. Significance level: * < .05 ** < .01 *** < .001.

Appendix 10

Logistic regression: Asset ‘dynamic plus OGRS 3 (model)’ on re-offending (construction sample, which includes sentenced and Final Warning cases)

The column ‘odds ratio’,⁸³ refers to a measure of effect size,⁸⁴ for the predictor variables.

Table A.18: Logistic regression: Asset ‘dynamic plus OGRS 3 (model)’ on re-offending (construction sample n=5,054, which includes sentenced and Final Warning cases)

Predictor	Logistic coefficient	Wald	Significance	Odds ratio
Dynamic predictors				
1. Living arrangements	0.04	1.02	0.31	1.04
2. Family and personal relationships	0.08	3.84	0.05	1.08
3. Education, training and employment	0.05	1.91	0.17	1.05
4. Neighbourhood	0.06	2.27	0.13	1.06
5. Lifestyle	0.14	10.97	0.00***	1.15
6. Substance use	0.08	5.96	0.01*	1.08
7. Physical health	0.10	2.20	0.14	1.10
8. Emotional and mental health	-0.01	0.08	0.78	0.99
9. Perception of self and others	0.00	0.00	0.97	1.00
10. Thinking and behaviour	0.01	0.07	0.80	1.01
11. Attitudes to offending	0.00	0.00	0.98	1.00
12. Motivation to change	0.26	30.58	0.00***	1.30
OGRS 3				
Prob.1-year re-offending	2.68	254.14	0.00***	14.56
Constant	-2.18	510.16	0.00	0.11

1. Source: JCS.

2. Nagelkerke $R^2 = .206$.

3. Asterisks indicate whether factors differ significantly. Significance level: * < .05 ** < .01 *** < .001.

The predictive validity of Asset dynamic factors plus OGRS was tested using logistic regression. ‘Lifestyle’, ‘motivation to change’ and ‘substance use’ were still significant predictors, and so was the OGRS 3 score. This model achieved the highest AUC of 0.72 (n=2,172 containing sentenced and Final Warning cases).

⁸³ See Glossary for explanation.

⁸⁴ See Glossary for explanation.

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Assessing the predictive validity of the Asset youth risk assessment tool using the Juvenile Cohort Study (JCS)

Asset is a structured risk assessment tool for young people, used by all youth offending teams in England and Wales. This research was commissioned to inform the Youth Justice Board's (YJB) review of assessment and intervention planning. Using data from the Juvenile Cohort Study, it aimed to evaluate how well Asset predicts future proven re-offending over a one-year period. The predictive validity of Asset was also compared against the Offender Group Reconviction Scale (OGRS 3) and a combination of static and dynamic components of Asset.

Asset was found to be a good predictor of one-year proven re-offending: those with higher Asset scores were more likely to re-offend, to commit more re-offences, to commit more serious re-offences, and were more likely to receive a custodial disposal (compared to those with lower Asset scores). Asset plus OGRS 3 was the best predictor of proven re-offending of those tested. As a predictor of re-offending, OGRS 3 was as good as Asset, but it did not perform well as a standalone measure for Final Warnings. The results generally support the application of OGRS 3 in the youth justice system for predicting proven one-year re-offending, which was proposed as part of the YJB review of assessment and intervention planning (although more detailed assessments may still be required for intervention planning).

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